Nortel Symposium

Network Manager's Guide

Reference Guide
for
Installing, Configuring, and Maintaining the
Symposium TAPI Service Provider
for Meridian 1 Release 2.

NORTEL NETWORKS

Nortel Symposium Network Manager's Guide
Reference Guide for the Symposium TAPI Service Provider
for Meridian 1 Release 2

Publication number:

Document release:

Date: September 1999

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Printed in the United States of America

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About this Guide

This *Network Manager's Guide* describes how to install and maintain the Symposium TAPI Service Provider for Meridian 1 Release 2. The Symposium TAPI Service Provider for Meridian 1 Release 2 is also referred to as the Symposium TAPI Service Provider is this document. Information in this document is intended for use by Meridian 1 users who have bought or developed a TAPI-compliant application and need a Symposium TAPI Service Provider platform to support the deployment of the application or for application developers who want to write TAPI-compliant applications for deployment on the Meridian 1.

Note: Exercise caution while performing tasks that may disrupt service. These tasks include taking the Meridian Link off-line, resetting the Meridian Link, reloading the Meridian 1 Windows NT Service driver and changing initialization parameters.

This guide is divided into the following chapters and appendices:

Chapter 1, "Overview," an overview of the Symposium TAPI Service Provider and summarizes features supported by the Symposium TAPI Service Provider.

Chapter 2, "Installation," summarizes the installation process and describes in detail how to complete the Symposium TAPI Service Provider installation.

Chapter 3, "Configuring the Symposium TAPI Service Provider" provides information on configuring the Symposium TAPI Service Provider, using the M1S Configuration application.

Chapter 4, "Configuring the FlexLM License Manger," summarizes and explains in detail how to configure and use the FlexLM License Manager.

Chapter 5, "Microsoft TAPI 2.1 and TCMAPP," provides the steps to use Microsoft TAPI to 2.1 and to set up the TCMAPP.

Chapter 6, "Additional Tools," describes the ACDProxy Service provided with the Symposium TAPI Service Provider. Also, some tips on using IVR and Microsoft Outlook are included.

Chapter 7, "Troubleshooting," details the Troubleshooting applications provided with the Nortel Symposium TAPI Service Provider and describes possible problems and the actions to take to resolve these problems.

Document Conventions

The following conventions are used in this document:

1. The individual keys that users are instructed to press appear inside angle brackets.
   For example: <Enter> or <F1>
2. "**Press**," "**Choose,**" or "**Click**" means to position the cursor over an option, then press and release the left mouse button to activate control and carry out an action.
3. "**Select**" means to position the cursor over an option, then press and release the left mouse button to highlight the selection.
4. "**Double click**" means to position the cursor over an option, then press and release the left mouse button twice.
5. Information that users are instructed to type appears in bold, italic print.
   For example: Type ***User Id*** or Enter ***User Id***
6. Menu commands and options that are displayed on the window appear in bold print, such as the **Exit** option located on the **File** menu on the Menu bar.
7. Window, screen, dialog box, or data entry field names display in italic print, such as, the *Open* field on the *Run* dialog box.
8. "**Button**" refers to a click or push button displayed on the window that is clicked on or pressed to carry out an action. **For example**: Click on the **OK** button or Click on

9. **"Check box"** refers to a square box displayed on the window that is clicked on to select or to clear an option. **For example**: ☐ -- option not selected or ☒ -- option selected
10. **"Option" or "Radio" button** refers to a circle displayed on the window that is clicked on to select or to clear an option. **For example**: ○ -- option is not selected or ⓿ -- option is selected
11. ***Note***: Identifies important User information and special instructions.

Note: **Notes display in paragraphs separated from other text.**

Online Documentation

The User documents for the Symposium TAPI Service Provider for Meridian 1 Release 2 (Symposium TAPI Service Provider) are provided electronically as online documents. One or more of these documents are contained on the Symposium TAPI Service Provider CD-ROM. The online documents are described in the following table:

Document Name	File Name	Description
Network Manager's Guide for the Symposium TAPI Service Provider for Meridian 1 Release 2	ntmgr.pdf	This user's guide provides information on installing, configuring, and using Symposium TAPI Service Provider for Meridian 1.
Implementation and Planning Guide for the Symposium TAPI Service Providers	ImplemR2.pdf	A planning guide for implementing Windows TAPI compliant applications that use the Nortel Symposium TAPI Service Provider.

The Adobe Acrobat Reader must be installed to access the online documentation. After installing the Adobe Acrobat Reader, double clicking on the .PDF file opens the online document in the *Acrobat Reader* window.

The documents listed below are available to developers through Nortel Networks Inc. Business Affiliate Prgram (BAP).

Programmer's Guide Volume 1 for the Symposium TAPI Service Provider for Meridian 1 Release 2	prmgr.pdf	This document contains information that is helpful to developers who are writing applications that may use the Symposium TAPI Service Provider for Meridian 1. This document may or may not be available on your CD-ROM.
Programmer's Guide Volume 2 for the Symposium TAPI Service Provider for Meridian 1	prmgrV2.pdf	This document is currently unavailable.
Programmer's Guide Volume 3 for the Symposium TAPI Service Provider for Meridian 1	prmgrV3.pdf	This document provides information on IVR/CTI Systems Integration and Networking using the Nortel Symposium TAPI Service Provider.

Update Policy

This is the final release of the *Network Manager's Guide for the Symposium TAPI Service Provider for Meridian 1 Release 2*. This manual includes all updates through release 2.2. Whenever the Symposium TAPI Service Provider software is reissued or revised, updates of this guide will summarize the new capabilities.

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Chapter 1: Overview

General information about the Symposium TAPI Service Provider to acquaint you with the TAPI Service Provider environment, architecture, features, applications, and feature interactions.

Symposium TAPI Service Provider Environment

The Symposium TAPI Service Provider software works in a distributed client/server environment that logically integrates the telephone on a user's desktop with client and server-based applications. The telephone is physically connected to the switch, but is not physically connected to the PC.

Users' desktops do not require any special telephones, connectors, PC circuit packs, or new wiring.

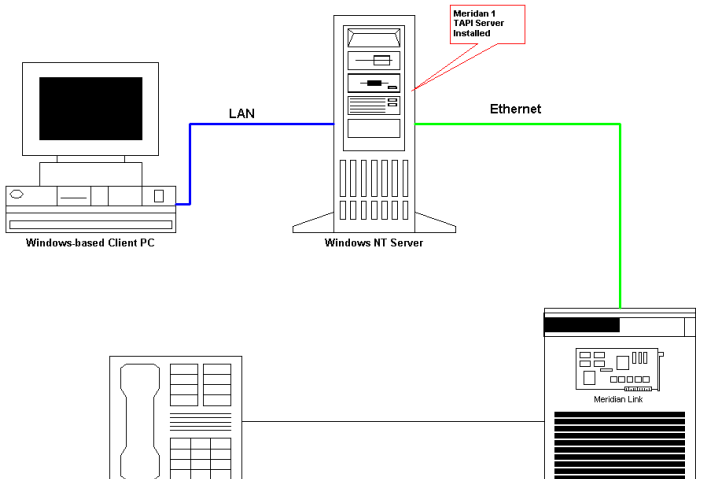
The Symposium TAPI Service Provider for Meridian 1 is a full function service provider for Microsoft's Telephony Application Programming Interface (TAPI) Release 2.0 and 2.1 for Windows NT 4.0 Workstation, Windows 95, and Windows 98. Release 1 of the software contained comprehensive support of Meridian 1 teleset and agent functions, coordinated screen transfer, open interface for integration with Interactive Voice Response (IVR) systems for caller entered information, sophisticated applications-based call routing, and the new Meridian Link 5 call processing features. Release 2 adds Direct Connect connectivity to the Meridian 1 switch without a Meridian Link module.

Symposium TAPI Service Provider for Meridian 1 Release 2 is software that runs on a Windows NT Server running Windows 4.0 or greater software (with a minimum of Service Pack 4 installed) that supports a Telephony Application Programming Interface (TAPI) on a Windows NT, Windows 95, or Windows 98 client. A PC application, acting on behalf of a user, can use the API to monitor and control calls at a device associated with the user. TAPI is a set of C-language routines that support telephony control capabilities for the central office switches.

Product Overview

The Symposium TAPI Service Provider for Meridian 1 Release 2 product includes all of the functionality of Release 1, plus support for an Ethernet, TCP/IP-based Embedded Local Area Network (ELAN) connection as its call control link to the Meridian 1 PBX. This transport uses the ELAN functionality provided on X11 Release 23 and higher PBXs.

System Architecture for Meridian 1



To support multiple CTI server environments where a customer may have another Link-compatible application that must monitor common devices, Release 2 of the Symposium TAPI Service Provider for Meridian 1 integrates with the Meridian 1 using the conventional Meridian Link Module and TCP/IP link over Ethernet. When the Symposium Call Center Server is used, Release 2 of the Symposium TAPI Service Provider integrates with the Meridian 1 via the Symposium Server version of Meridian Link (MLSM), using the TCP/IP link over Ethernet as illustrated in Figure 3.

Figure 1: System Architecture

Conventional Meridian Link Module Configuration

A typical Symposium TAPI Service Provider for Meridian 1 Release 2 configuration as shown in Figure 2, with conventional Meridian Link consists of three parts:

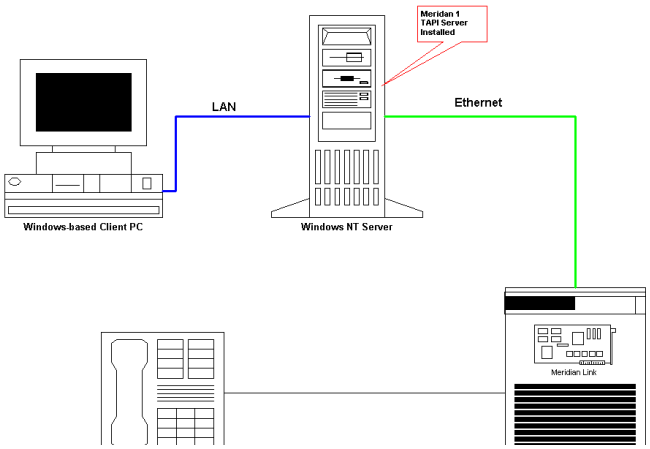


Figure 2: Conventional Meridian Link Configuration

- A Meridian Link Intelligent Peripheral Equipment (IPE) Module or an Application Module (AM) containing the Meridian Link application. The IPE or AM should be connected to the Customer's supplied ELAN (recommended).
- A Microsoft NT LAN with a Windows NT Server running 4.0 (with a minimum of Service Pack 4 installed) and, if applicable, at least one PC-based client workstation running Windows NT 4.0 Workstation, Windows 95, or Windows 98.

- An application such as Nortel Symposium Call Manager or Symposium Agent using call control and call monitoring functions.

A Meridian 1 station set connected to a standard Meridian 1 line card is associated with each PC client. These telephones are referred to as "associated sets."

Symposium Call Center Server Configuration

The Symposium Call Center Server simultaneously provides Symposium Call Center skills-based

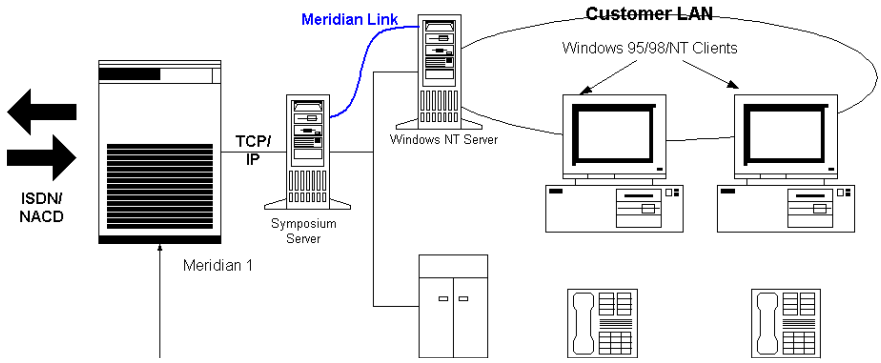


Figure 3: SCCS Configuration 1

routing and call center reporting services. To support installations served by the Symposium Call Center Server (SCCS), Symposium TAPI Service Provider links with the Meridian 1 using the SCCS version of Meridian Link and the TCP/IP link over Ethernet. Many TAPI services can monitor and control common devices.

Direct Connect Configuration

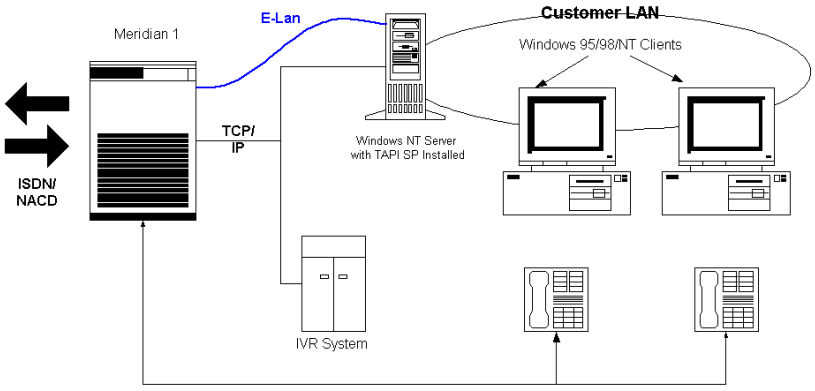


Figure 4: Direct Connect Configuration

If the Meridian Link or Symposium Call Center Servers are not used, Release 2 of the Symposium TAPI Service Provider offers a new direct integration with the Meridian 1 Release 23 and later systems using an ELAN-based connection directly to the Meridian 1 CPU as illustrated:

Using the Direct Connect option, up to 16 TAPI Servers may be connected to a single Meridian 1 system.

IVR and Networking

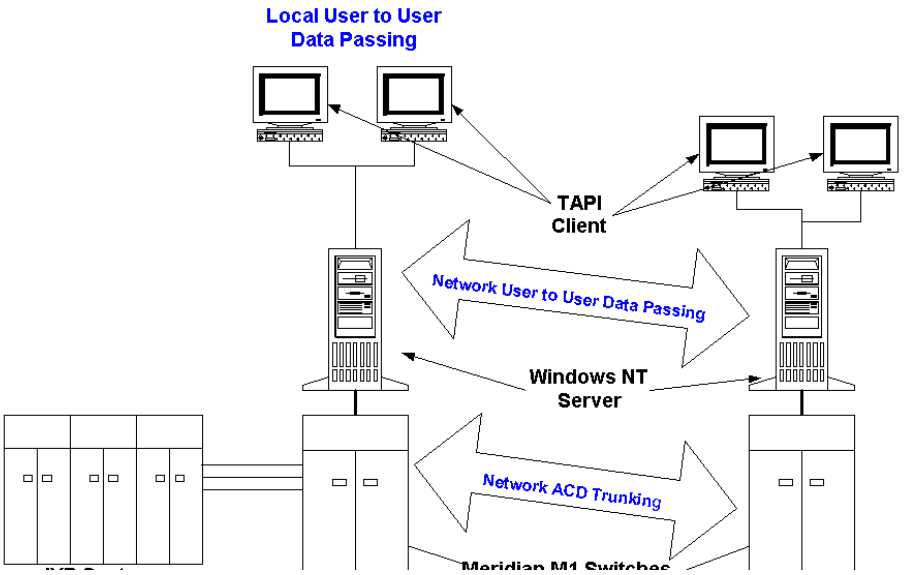
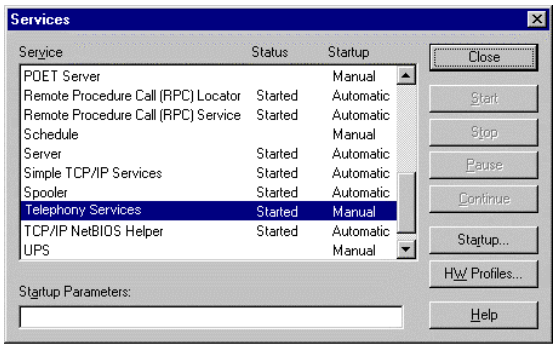


Figure 5: IVR Configuration

The Symposium TAPI Service Provider for Meridian 1 Release 2 provides server to server networking over WAN or LAN as shown in Figure 5. The open interface can obtain information collected by IVR Systems. The Information is passed to TAPI-compliant applications using the standard TAPI interface. The Symposium TAPI Service Provider works transparently with multiple Windows NT or Novell API servers. This environment is commonly used for Network Automatic Call Distribution (NACD). Up to 512 bytes are passed with a call locally or between servers in a Network ACD configuration.

Note: This Manual states that a minimum of Service Pack 4 or above is required. Both Service Pack 4 and 5 have been tested in Nortel's laboratories and found to be compatible with this version of Symposium TAPI Service Provider.

Microsoft TAPI Server (TAPISRV) and the Client



Typically, the Microsoft TAPI Server (TAPISRV) is a separate service available to the client. Access to the TAPISRV is provided by installing the Microsoft Windows Remote Service Provider, a telephony module responsible for routing the TAPI requests to a specific TAPI Service Provider. When the TAPISRV is installed, opening the Control Panel, and double clicking the **Services** icon opens the Services window. Telephony Services is listed as "Started", verifying that TAPISRV is running.

TAPI-compliant applications on the client issue TAPI messages. The TAPISRV Telephony Services communicates to the clients via a Local Area Network (LAN) through TCP/IP. TAPISRV routes the TAPI messages from the TAPI-compliant application on the client to the Symposium TAPI Service Provider on the server. The Symposium

TAPI Service Provider for Meridian 1 converts the TAPI messages to corresponding switch messages through the Meridian Link IPE module or direct ELAN-based connection to the Meridian 1. Likewise, the Symposium TAPI Service Provider converts the Meridian 1 switch to TAPI messages for routing to the client application via the TAPISRV.

Meridian Link Overview

Nortel's Meridian Link product enables an application in a host computer to use the call control and call monitoring functions of a Meridian 1 system. The Symposium TAPI Service Provider extends Meridian Link to a client application in a Windows NT 4.0 or higher client-server local area network (LAN) using TCP/IP on an Ethernet connection. The Symposium TAPI Service Provider supports Meridian Link Version 5 and Symposium Call Center System Meridian Link Service Module (MLSM).

Meridian Link R5C provides these new functions:

- 31 digit Dialed Number Identification Service (DNIS): This allows an application to collect the dialed digits of a call arriving on DID or TIE trunk from the external network. Using this information, users can identify the purpose of the call. This requires X11 R24 or higher.

- Set Feature Notification (SFN Login) with Agent ID: Sends an application an event message when an operation is performed on an AST/Acquired ACD set. This is an unsolicited message sent to the host application when an agent logs in by manually pressing the Make Set Busy (MSB) key on the ACD set or invokes the ACD set feature through the Meridian Link Set Feature Invocation (Login) message. This also requires X11 R24 or higher.

Administration and Configuration

An administrator may use either of two configuration processes included with the Symposium TAPI Service Provider for Meridian 1 Configuration application (called the M1S Configuration application). The first automatically translates and populates the Symposium TAPI Service Provider database tables with information you download from Overlays 20, 21, and 23 on the Meridian 1 switch. The Configurator application displays this information in the configuration dialog boxes for viewing and maintenance. This configuration process is detailed in the "Automatic Configuration Process" section located in Chapter 3.

For instances where it becomes necessary to add, to delete, or to modify the database information, the second configuration method provides access for manual changes to the configuration dialog fields. The fields on the configuration dialog boxes add, modify, and delete the information contained in the database tables. The "Customized Configuration" section in Chapter 3 provides information on accessing the configuration dialog boxes.

Chapter 3 also contains detailed information on configuring the Provider, Host, Control DN, IVR, and Log Styles tables. These sections contain information on the dialog boxes associated with the table configurations.

The FlexLM License Manager allows you to configure the License Manager Server and the License file that you received when you purchased the Meridian 1 TAPI Service Provider. The license file is necessary for the Meridian 1 TAPI Service Provider to work.

The license file delivered with the Symposium TAPI SP for Meridian 1 Release 2 CD_ROM allows a maximum of 1,000 DNs to be simultaneously controlled or monitored by TAPI applications. This applies to each of the three configurations above.

Features of Symposium TAPI Service Provider for Meridian 1

Symposium TAPI Service Provider for Meridian 1 Release 2 supports the following features:

Basic Call Control

Basic Call Control includes support for the following features:

- Make Call
- Answer Call
- Release Call
- Hold Call
- Unhold Call
- Conference Call (Three and Six Party)
- Transfer Call (Blind and Supervised)
- Monitoring of Call Events

Enhanced Call Control

Enhanced Call Control includes support for the following features:

- Swap Hold
- CDN Treatments (Ringback, Busy, Silence, Music) are not supported in the Direct Connect configuration.
- Initiate Call from phanton TN

Automatic Call Distribution

Automatic Call Distribution (ACD) is a set of feature packages based on software that provides call distribution in a call center environment.

Some of the features are:

- The ability to set up one main number and distribute the calls to a group of agents
- The ability to set up a supervisor position for an ACD group
- The ability to monitor the quality of the service being provided to incoming callers
- The ability to gather information on the calls such as, hold time, time in queue, and the number of agents logged in a queue.

Nortel provides a separate application called ACDProxy Service. This application allows the agents to log in, log out, and go ready or not ready. ACDProxy Service also registers the ACD Queue numbers so an application does not have to be launched prior to an agent logging in to a queue. The setup procedures for the ACDProxy Service are located in Chapter 5.

Note: A minimum of Microsoft Service Pack 4 is required for the ACD Proxy Service to work. Ensure the TCM Application is set up before configuring the ACDProxy Service. Refer to the "Setting up the TCM Application" section located in Chapter 4 for additional information.

Automatic Call Distribution (ACD) includes support for the following features::

- Login/Logout
- Ready/Not Ready
- Walkaway Return
- Call Forward/Cancel Call Forward
- Make set busy
- Make set in service

Device Control

The following features are provided to manipulate a device:

- Forward Calls
- Set the message waiting indicator of a device
- Validate a device
- Event management

Predictive Dialing

The Symposium TAPI Service Provider supports outbound and predictive dialing application products that utilize the TAPI Service Provider interface for call control and monitoring. Outbound and predictive dialing applications and tools allow call centers to perform telemarketing, collections, telesales, and account management for various industries efficiently by improving agent productivity and helping supervisors manage their workforce better

Trunk Monitoring

This feature allows Symposium TAPI Service Provider for Meridian 1 to process the link messages for inbound and outbound calls on the monitored trunk. The application can use trunk information to record conversation of incoming and outgoing calls.

Interactive Voice Response

Symposium TAPI Service Provider for Meridian 1 provides call data support for inbound calls transferred from the Open IVR Module and monitored by Symposium TAPI Service Provider.

It also provides Network Call Data supports for calls overflowed from other remote Meridian 1 switches controlled by Symposium TAPI Service Providers.

Security Feature

Symposium TAPI Service Provider for Meridian 1 uses the FlexLM License Manager supplied by GLOBEtrotter Software Inc. to protect from illegal use. This feature discussed in detail in Chapter 4.

Administration Features

M1S Configuration Application

The M1S Configuration application populates and maintains the Symposium TAPI Service Provider database tables. These tables include entries for controllable telephone and their call control supported features.

Link Recovery

This feature silently observes the link status between Symposium TAPI Service provider and link protocol on Meridian 1 switch. If the link loss is detected then it will try to reestablish and revalidate the link status.

Diagnostic/Troubleshooting Tools

Following is the brief description of tools supplied with Symposium TAPI service Provider for Meridian 1. A separate chapter 7 is devoted to discuss troubleshooting tools and tips.

Logger Application

When experiencing problems, technical personnel may request you to use the Logger tool to create a trace of the application activities. During the troubleshooting session, the Logger application writes status and error message data items (as defined on the configuration dialog boxes) to the scrollable Logger window and, when full, to the overflow file. You have the option of saving the information in overflow file for support personnel to use for diagnostic and troubleshooting purposes. The Logger application has options for printing the file or a highlighted section on the window.

License Manager Troubleshooting tools

- SADDBMON is a console debug monitor application. It display important error information describing cause of failure.
- DEBUG.LOG is log file written by FlexLM License Manager. It contains error log in case of failure or otherwise status information.

Microsoft TAPI Browser (Tb20w.exe)

The Microsoft TAPI Browser tool assist you in verifying that the Symposium TAPI Service Provider is properly install, Configured and running.

Note: These features are not supported by the Direct Connect option.

CDN Treatments/Call Routing Features

CDN Call Model

Initiate call from Phantom TN (X11 R20)

Note: Whereas the Nortel Symposium TAPI Service Provider supports Predictive Dialing and other Call Data applications, the IVR information in this document is not necessarily IVR specific. The information applies to Predictive Dialing as well as other applications, except as noted.

Symposium TAPI Service Provider Feature Interactions

Users of TAPI-compliant applications running in a Symposium TAPI Service Provider for Meridian 1 environment must be aware of the results of some specific feature interactions. The following sections explain the feature interactions with the Symposium Call Center Server, the Direct Connect option, and other applications.

Feature Interactions with the SCCS

Users of TAPI-compliant applications running in a Symposium TAPI Service Provider for Meridian 1 Release 2 environment using Meridian Link Service Module (MLSM) on Symposium Call Center Server (SCCS) must be aware of the some specific features that are not available:

- Not Ready with Optional Disconnect: An application invokes the NotReady status for a set without disconnecting the call.
- Enhanced Time Stamp IE: Used in StatusChange.
- Set Feature Notification messages for Ready/Not Ready, Login/LogOut, and Walk Away/Return.

Feature Interactions with the Direct Connect Feature

Users of TAPI-compliant applications running in a Symposium TAPI Service Provider (including the Direct Connect) environment must be aware of the results of some specific feature interactions:

- Use your application's interface to perform all call control activities in X11 pre-Release 23. If you use the application's interface to perform some call control activities and the features on your telephone set to perform others, you will encounter unexpected results. Specifically, the TAPI-compliant application:
  - Does not support multiple users putting the call on hold. The Symposium TAPI Service Provider cannot outpulse digits after establishing a call. If a Symposium TAPI Service Provider application station calls another Symposium TAPI Service Provider for Meridian 1application station, only one user can put the call on hold.
  - Symposium TAPI Service Provider supports analog telephone sets differently from digital telephone sets. For analog telephone sets, Symposium TAPI Service Provider for Meridian 1: (1) does not recognize call activity associated with an analog set's directory number if a call to an analog ACD set is abandoned, (2) does not support a TAPI-

compliant application's answering of calls for analog sets; users of analog sets must lift the handset or otherwise cause the line to go off hook to answer calls, and (3)supports a TAPI-compliant application hanging up the telephone of an analog set but the handset cradle must be returned to the cradle before it is picked up again.

Other feature interactions include:

- Symposium TAPI Service Provider does not support Multiple Appearance Directory Numbers (MADNs).
- Symposium TAPI Service Provider does not display the called number (when dialing from the set) until the called party answers.
- Symposium TAPI Service Provider does not support MCRs (multiple call ring) and MCNs (multiple call no ring).
- Symposium TAPI Service Provider does not support speed dial feature access codes.
- Symposium TAPI Service Provider does not recognize callers that hang up during a supervised transfer or conference call.
- Symposium TAPI Service Provider does not recognize calls that have been manually transferred from a telephone set not configured with the associated set (AST) feature.
- Symposium TAPI Service Provider does not support the X11 Release 22 Group Call feature.

Feature Interactions with Other Software Products

The Nortel Symposium TAPI Service Provider for Meridian 1 Release 2 is compatible with many other software products. Some examples include two new Nortel products that were released in 1998, the Nortel Symposium Call Manager and the Symposium Agent. Refer to the user documentation provided with these products for detailed information.

Microsoft Outlook 97 Version 8.02.4212 or above works with the Symposium TAPI Service Provider for Meridian 1 Release 2. Additional information for configuring Microsoft Outlook 97 is provided in the "Microsoft Outlook 97" section in Chapter 5

Networking CALLDATA between Symposium TAPI Service Providers

The Meridian1 switch supports call routing between a network of Meridian 1 switches through ISDN trunk using Network Automatic Call Distribution (NACD). This functionality allows Symposium TAPI Service Provider for Meridian1 to consistently and reliably track CALLDATA related to calls that overflow from one Meridian 1 to another Meridian 1.

The Nortel Network CALLDATA management through Symposium TAPI Server is an "On Demand CALLDATA". The CALLDATA is obtained through the network over TCPIP using the documented protocol illustrated in the *TAPI Programmer Manual*, which is available for download at the BAP (Business Affiliate Partner) Internet site.

The requirements for the CALLDATA networking are as follows:

- All switches must be on an ISDN trunk.
- NACD package must be installed on the M1.
- Each switch must have a unique home location code.

- All Symposium TAPI Servers must be running version 2.2 of the software or higher to communicate.

- All machines must be seen via TCP/IP and must have the ability to be "pinged" by the TCP/IP "ping" facility.

- Symposium TAPI Server must have the TAPI_IVR_feature option on the supplied license file.

Restriction for Network ACD Overflow and CALLDATA

Network CALLDATA only works if the call comes from another agent via another M1. The destination of the call on the receiving side can only be ACDQUEUE or CDN.

Performance of Network ACD Overflow and CALLDATA

From lab measurements, a call rate of 1.15 calls/sec overflowing used 8 percent of the CPU on a Pentium PRO 200.

What is "On Demand CALLDATA"?

When a call is offered to an agent, it contains the Call ID of that local Meridian 1 switch. If the call is NACD overflowed to the remote switch, then the call offered at the remote switch contains both the Call ID generated at that local switch, and a Network Call ID. The Network Call ID consist of the Call ID that was generated at the first switch prefixed with the Home Location Code (HLOC) of first switch.

The Symposium TAPI server extracts the HLOC from the *Network Call ID* field. The HLOC then is searched in the **IVR_HOST** table to find IP address of the remote TAPI Server, after finding an entry in table, it sends a TCP/IP message requesting call data for Network Call ID to remote Symposium TAPI server. The **IVR_HOST** table contains HLOC and corresponding IP address of all participating TAPI servers in network. The IVR_HOST table will be configured during initialization.

Protocol Description

Please see the TAPI Programmer reference manual for the description of the protocol used to communicate with the TAPI Servers. Any application can communicate with the TAPI Servers as long as the described protocol documented in the manual is followed

Chapter 2: Installation

This chapter contains instructions for installing the Symposium TAPI Service Provider, including what you should know beforehand, and hardware and software requirements.

The Chapter includes overviews of the installation process for (1) Conventional installation, (2) the Symposium Call Center Server installation, (3) the Direct Connect option, and (4) the steps involved in the Symposium TAPI Service Provider software installation.

Summary of the Conventional Installation

This section summarizes the baseline requirements and the steps for a conventional installation including the Meridian Link. It is important to follow the list of procedures in the order in which they appear.

Note: For information on the installation process with the Symposium Call Center Server, refer to the "Installation Summary of the Symposium Call Center Server" section. For information on the Nortel TAPI Service Provider Direct Connect option, refer to the "Installation Summary of the Direct Connect Option" section.

Baseline Requirements

Symposium TAPI Service Provider for Meridian 1 Release 2 supports Call ID. Therefore, Meridian 1 PBX with a minimum release level of 23 is required. If Voice Processing functions are required, a Meridian Mail system of Release 8 or higher is necessary. Meridian 1 options 11 through 81 are supported. The supported machine types include ST, RT, NT, and XT. If you are using the Direct Connect Option, refer to the "Direct Connect Option Baseline Requirements" section. If you are using the Symposium Call Center Server, refer to the "Symposium Call Center Server" section.

Required options and hardware include the following:

- Meridian Link IPE Module or Application Equipment Module (AEM).
- ESDI Card (QPC513 Vintage G or later)
- Integrated Messaging (IMS) [35]
- Command and Status Link (CSL) [77]
- ISDN/AP for 3rd Parties (IAP3P) [153]
- Meridian Link (Release 5 or higher) - Meridian Link Packages only
- Meridian Link OA&M [1] - Meridian Link Packages only
- Inbound Call Management [Meridian Link package 97]
- Outbound Call Management [Meridian Link package 98]
- Call ID [247]

Note: Use of the AEM requires a hardware upgrade to make the Ethernet port accessible.

Additional options that might be required, depending on the TAPI application, may include but are not limited to:

- Basic Automatic Call Distribution (ACD) [40,41,45]

- Dialed Number Identification Service (DNIS) [Meridian Link package 98]
- ACD usage reports [42]
- ACD load management [43]
- Host Enhanced Voice Routing [Meridian Link package 101]
- Host Enhanced Routing [Meridian Link package 100]
- ACD D used for ACD MAX applications [50]
- Enhanced ACD routing (EAR) [214] - for Host Enhanced Routing
- Customer Controlled Routing (CCR) [215] - for Host Enhanced Routing
- Integrated Services Digital Network (ISDN) [145] - for CLID
- Primary Rate Access (PRA) [146] - for CLID
- ISDN Signaling Link (ISL)

The Symposium TAPI Service Provider is designed to be hardware independent. Therefore, all that is required is a system that runs the Windows NT Server 4.0 or higher operating system. This may or may not be a Symposium Call Center Server system.

Minimum Server PC Requirements

The minimum hardware level of the server PC is as follows:

- Pentium 200 MHz CPU
- CD ROM
- 64 Megabytes of RAM
- 20 Megabytes of free disk space for the Symposium TAPI Service Provider, support tools and database. Microsoft TAPI software is already present on the Windows NT server.
- Ethernet card (dedicated LAN to Meridian 1)
- LAN card (for client PC LAN connection)
- Mouse
- VGA or SVGA Display (800X 600 pixels)

Other server activity may affect the Symposium TAPI Service Provider performance. While a dedicated TAPI NT server is not required, some large, time critical applications may warrant one.

The minimum software requirements are as follows:

- Windows NT 4.0 Server Software (do not use Beta NT 4.0 software) with a minimum of Service Pack 4 installed. We recommend Service Pack 5 for use with the Symposium TAPI SP Release 2.2.

Note: If you install Microsoft TAPI 2.1 for Windows NT 4.0, Service Pack 4 or higher must be installed. No Service Pack 4 is provided on the CD-ROM with the Symposium TAPI Service Provider software. Service Packs are available from the Microsoft Web page. You must install it yourself. Refer to the Readme.txt file provided with Microsoft TAPI 2.1 software for additional information.

WARNING: Service Packs 4 and 5 include the upgrade to Microsoft TAPI 2.1. If you have Service Pack 4 or 5 installed, do not install Microsoft TAPI 2.1 over it. Doing so will result in unexpected behavior in Symposium TAPI SP.

- Microsoft TAPI 2.1 files
- Symposium TAPI Service Provider software

Direct Connect Option Configuration

X11 Release 23 packages necessary to configure the Meridian 1 PBX when using the Direct Connect option with Symposium TAPI Service Provider: 35, 77, 311, 324.

Overview of the Meridian Link (Conventional) Installation Process

Follow the list of procedures in the order in which they appear.

Note: If you are upgrading from a previous version of the Symposium TAPI Service Provider, be sure to remove that version before installing the new version. Read the Release notes provided with upgrades and patches before installing them.

1. Verify that Windows NT 4.0 server (with a minimum of Service Pack 4 installed) is installed and running, that all user IDs and passwords are configured properly, and that users can log in to the TAPI NT server.

2. Install and configure TCP/IP software on the TAPI NT server.

Note: Refer to your Windows NT installation TCP/IP documentation.

3. Verify that the Meridian 1 PBX is equipped with X11 Release 23 or later and includes all software packages needed to support Meridian Link Release.

4. Refer to "*Meridian 1 System Installation Procedures (553-3001-210")* and "*Meridian Link/ Customer Controlled Routing Installation and Upgrade Guide (553-3202-210).*"

   A. Use LD 22 to obtain a printout:

      - At the REQ prompt, type ***PRT*** and press <Return>.
      - At the TYPE prompt, type ***PKG*** and press <Return>.

   B. Verify that the following packages are installed:

      - IAP3P, 153 Application Module Link
      - MLM, 209 Meridian Link Module
      - EAR, 214 Enhanced ACD Routing
      - CALLID, 247 Call ID

5. Configure the Meridian 1 to support Meridian Link.

Refer to the "Meridian 1 configuration for Meridian Link/CCR" chapter in the *Meridian Link/Customer Controlled Routing Installation and Upgrade Guide (553-3202-210).*

6. In LD 17, at the ADAN prompt, configure the AML of Meridian Link as follows:
   - BPS = 19200
   - IADR = 3
   - RADR = 1
7. Use LD 22 to print out the VAS. Select an unused VSID.
8. In LD 17, at the VAS prompt, configure the selected VSID to the AML number of the Meridian Link. In this load, also set the following:
   - SECU = YES
   - CONF = DIR
9. In LD 15, at the AML_DATA prompt, set up VSID to the VSID set in LD 17 for your Meridian Link.

Each telephone DN monitored by the TAPI Service Provider needs to have the AST configured to the value of the key using LD 11. Meridian Group Unsolicited Status Message Group (IAPG) assigns AST DNs to a status message group defined in LD 15. We recommend setting the default to 1 to send all messages (default 0 sends no messages). For example, if the keys you choose to control are 00 and 03, set the AST values for 00 and 03. To have other TAPI Service Provider call control features, such as transfer and conference, they must be programmed on the set.

For users who are using ACD functionality, configure the ACD queue. In LD 23 (ACD), the Value Added Server ID (VSID) must be defined in order to receive Meridian Link messages. When an event such as an incoming ACD call occurs, and the VSID is correctly defined, a Meridian Link message reflects this activity. The VSID value range is 0-15 as defined in the X11 input/output guide.

10. Use LD 22 to print out your configuration as follows:
    - At the REQ prompt, type ***PRT*** and press <Return>.
    - At the TYPE prompt, type ***CFN*** and press <Return>.
    - Find the Action Device and Number (ADAN) for the AML.
    - Compare it with the ADAN for AML7 listed in the example provided in Appendix B.
    - Find the listing for Value Added Server (VAS) and locate the VSID for the AML.
    - Compare it with VSID07 example that is listed in Appendix B.

Note: All telephones used with Symposium TAPI Service Provider must have six-party conference assigned to the sets to support holding of calls from the TAPI application in X11 Release 22. Refer to the Meridian SL1 X11 Input/Output Guide, PO842663, or contact your system administrator for assistance. The Multiple Appearance Destination Number (MADN) feature is not supported with the Symposium TAPI Service Provider for Meridian 1.

Note: Complete step 10 before going to step 11.

11. If you are running X11 Release 22 or above, omit this step. If you do not have X11 Release 22 or above, install and configure a Phantom DN. Phantom DNs are used to support Hold functions in the Meridian TAPI Service Provider. Refer to the "Installing and Configuring the Phantom DN" section later in this chapter.

12. Verify that the setting of port 5 of the IPE Module complements the setting of the Enhanced Serial Data Interface (ESDI) port of the Meridian 1. For example, if the ESDI port of the Meridian 1 is set to DTE, port 5 of the IPE Module must be set to Data Terminal Equipment (DTE).

13. Install the Meridian Link IPE Module or Application Module. Refer to the "Hardware installation" chapter in the Meridian Link/Customer Controlled Routing Installation and Upgrade Guide (553-3202-210).

This completes installation of all hardware needed to support Symposium TAPI Service Provider for Meridian 1.

Installing the Meridian Link operating system.

Note: Refer to Procedures 6 and 7 in the "Software Installation, Update, and Upgrade Procedures" chapter of the *Meridian Link/Customer Controlled Routing Installation and Upgrade Guide (553-3202-210).*

1. Install the Meridian Link Release 5 application.

2. Verify that the Meridian link is operating by performing "Procedure Verifying the link status," located in the *Meridian Link/Customer Controlled Routing Installation and Upgrade Guide (553-3202-210).* Include the following steps (you must be logged in as mluser):

   - Type ***status link 0*** and press <Return> to verify the status of the link to Meridian 1. The response "Link 0: Up" indicates the link is functioning properly.

   - Type ***status link 1*** and press <Return> to verify the status of the link to the host computer. The response "Link 1: UP" indicates that the link if functioning properly.

   - Type ***status link 2*** and press <Return> to verify the status of the link to the host computer. The response "Link 2: Up" indicates that the link is functioning properly.

Note: If you receive a different response than what is listed, refer to the Application Module and Intelligent Peripheral Equipment Module Diagnostic and Maintenance Guide (553-3211-510).

3. Verify that the Meridian Link supports TCP/IP by performing the following procedure on the TAPI server system console:

   - Type ***ping*** [IPE TCP/IP Address

     If you are successful, a message displays stating the Host was contacted. If not successful, the displayed message states the Host was not contacted. Proceed to the Troubleshooting section.

4. Close the **ping** window by pressing **<Esc>.**

5. Configure the switch to support TAPI Server outbound trunk monitoring. Refer to the "Configuring the Switch to Support Outbound Trunk Monitoring" section for detailed information.

6. Install the Security Device provided with the Symposium TAPI Service Provider. The TAPI Service Provider will not work if the Security Device is not installed. Refer to the "Installing the Security Device" section for detailed information.

7. Install the Symposium TAPI Service Provider software on the server.

8. Add the Symposium TAPI Service Provider in Windows NT. This procedure is outlined in the "Installing the Symposium TAPI Service Provider" section.

Note: If you are upgrading from a previous version of the Symposium TAPI Service Provider for Meridian 1, be sure to remove the previous version of software before installing the current software. Refer to the "Removing Symposium TAPI Service Provider Software" section located in Chapter 8 for detailed information on removing the Symposium TAPI Service Provider software. Before reinstalling the Nortel Symposium TAPI Service Provider, ensure that TAPISRV.exe is not running and that the Telephony Service has been stopped. Refer to the "TAPI Server (TAPISRV) and the Client" section located in Chapter 1 for additional information on the Telephony Services (TAPISRV). You may verify the status of the TAPISRV (Telephony Services) by (1) opening the Control Panel and (2) double-clicking the Services icon to display the *Services* dialog box.

9. Configure the Symposium TAPI Service Provider for Meridian 1. This procedure is detailed in Chapter 3.

Run the Microsoft TAPI Browser or the Microsoft Dialer to verify the Symposium TAPI Service Provider is operating on the Windows NT server.

10. Install and configure TAPI-compliant application(s). Refer to the application's user documentation. The following Figure shows a typical installation.

11. Upgrade the Microsoft TAPI to 2.1. (Refer to Chapter 4 of this document for detailed information.)

12. Configure the TCMAPP. (Refer to Chapter 4 of this document for detailed information.

This completes the installation and setup of the Symposium TAPI Service Provider for Meridian 1 Release 2. For additional information, refer to the following:

- Meridian Link/CCR IPE Module Installation Photo Guide, H029
- Meridian ACD packages A-C2 and Network ACD, P0800525
- Meridian Link and Customer Controlled Routing Engineering Guide, P0724947
- Application Module and Intelligent Peripheral Equipment Module Advanced Maintenance Guide Package, PO724945

Configuring the Switch to Support Outbound Trunk Monitoring

To monitor the trunk for the status events of answered and disconnected:

- On the Meridian 1, the trunk must be set up as AST.

- On the Meridian 1, IAPG must be set up to select the appropriate events (1 = all events.)
- The CTI application must register the trunk to be monitored.
- The status change messages for the monitored trunk can only be sent when the trunk statuses are detected. That is, when the trunk is equipped with answer supervision and disconnect supervision. If the digital trunk interface is not used, the Answer and Disconnect Supervision (SUPN) prompt must be set to yes in Load 14 so answer and disconnect supervision is allowed.

Software requirements

- The Symposium TAPI Service Provider for Meridian 1 Rel2 must be 2.1.0.0 or higher.
- The switch software must be Issue 24 or above.
- The Meridian Link must be Version 6.42 or above.

Call Scenarios

When an Inbound call is received on this trunk, call information is available for the call. No database configuration is needed.

When an Outbound call is made on this trunk (as configured) and route 118 (example only) is being monitored by the TAPI Service Provider (database configuration is needed), the outbound Trunk ID (route and member call information) is now available from dwTrunk info from the lineGetCallInfo structure.

The following is an example of a route member (for route 118), AST has been turned on, and IAPG is set to 1.

```
ld 21
PT1000
REQ: prt
TYPE: trk
TN 5 1
DATE
PAGE
DES LAB_61C
TN 005 01
TYPE TIE
CDEN SD
CUST 0
NCOS 0
RTMB 118 1
B-CHANNEL SIGNALING
TGAR 1
AST YES
IAPG 1
CLS CTD DTN WTA LPR APN THFD HKD
P10 VNL
TKID
DATE 23 NOV 1998
NACT 3
```

Installing and Configuring the Phantom DN

Note: It is not necessary to install and configure Phantom DNs if you are running X11 Release 22 or above. Because Meridian Link does not support Hold functions, Phantom DNs must be configured on the Meridian 1 to support Hold functions from the TAPI application running on a client PC. Configurations of Phantom DNs vary depending on the version of X11 software installed in the Meridian 1.

For a detailed description of the Phantom DN feature, refer to the chapter on "Phantom DNs" in the *X11 Features and Services (553-3001-305).*

X11 Release 19

Use LD 10 to configure a standard analog set (see the following sample configuration). For more information on using LD10, refer to *X11 Administration Programs (P0800600).*

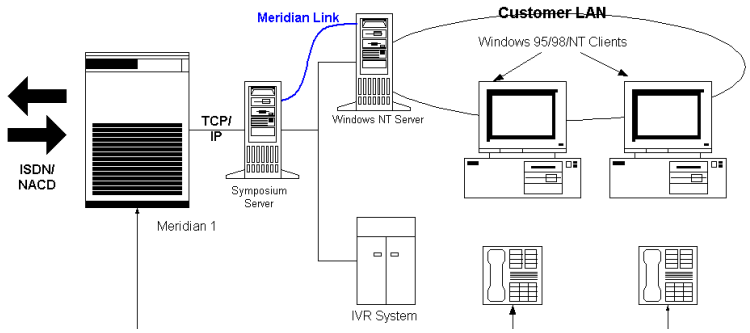
REQNEW
TYPE: 500
TN4 0 2 12
CDEN<CR>
DESFANTOM
CUST 0 <CR>
DN2678 (Phantom DN)
MARP <CR>
CPND <CR>
VMB <CR>
AST<CR>
IAPG<CR>
HUNT<CR> Release 2TGAR<CR>
LDN<CR>
NCOS<CR>
RNPG<CR>
SGRP<CR>
CLSDTN
SCI<CR>
MLWU_LANG <CR>
PLEV<CR>
FTR<CR>

- Short the tip and ring leads of the analog port (TN).
- Write down the Phantom DN and enter it into a Phantom DN field when you install the Symposium TAPI Service Provider for Meridian 1.

X11 Release 20 or later

The Phantom TN (PHTN) feature is available as package 254. If the Meridian 1 PBX is not equipped with this package, use the procedure for X11 Release 19 or earlier. For detailed information on configuring a phantom TN/DN, refer to X11 Features and Services: (553-3001-305).

Installation Summary of the SCCS



This section summarizes the baseline requirements and the steps for the SCCS installation. It is important to follow the list of procedures in the order they appear. To support installations served by the Symposium Call Center Server (SCCS), the Symposium TAPI Service Provider integrates with the Meridian 1 using the SCCS version of Meridian Link and the TCP/IP link over Ethernet

Figure 1: Call Center Server Configuration

This figure shows an overview of the Symposium Call Center System.

Baseline Requirements

Before installing the Symposium TAPI Service Provider for Meridian 1, ensure that:

- Symposium Call Center Server is fully functioning, and the TAPI Server is connected on the Client Local Area Network (CLAN).
- You know the CLAN TCP/IP address to complete the software installation. The defaults for the Meridian Link setup on the TCP/IP are used for the Symposium Call Center Server.
- MLSM (Meridian Link) service is running on the SCCS server.

Overview of the SCCS Installation Process

Follow the list of procedures in the order they appear. Read the Release notes provided with the software, the software upgrades, or software patches before installing them.

1. Verify that Windows NT 4.0 server or greater (with a minimum of Service Pack 4 installed) is installed and running, that all user IDs and passwords are configured properly, and that users can log in to the TAPI NT server.
2. Verify that the Symposium Call Center is fully functioning, that all user IDs and passwords are configured properly, and that users can log in to the TAPI NT server.
3. If the SCCS is used for skillset routing, configure the telephone User ID's and Passwords needed for skillset routing. If the SCCS server is used only for MSLM (Meridian Link), you do not need to configure the phones.
4. Each telephone DN monitored by the TAPI Service Provider needs to have the AST configured to the value of the key (using LD 11). For example, if the keys you choose to control are 00 and 03, set the values for 00 and 03. To have other TAPI Service Provider call control features, such as transfer and conference, they must be programmed on the set.

Note: Defining a VSID in LD 23 (ACD) is not possible or necessary when using SCCS. When an event such as an incoming ACD call occurs, a message reflecting this activity is sent on the AML/ELAN (Embedded Local Area Network) without a VSID defined in LD 23. The AML/ELAN value range is 16-31.

5. Install the Security Device included with the Symposium TAPI Service Provider. The TAPI Service Provider will not work if the Security Device is not installed. Refer to the "Installing the Security Device" section for detailed information.

6. Install the Symposium TAPI Service Provider software on the server.

Note: If you are upgrading from a previous version of the Symposium TAPI Service Provider for Meridian 1, be sure to remove the previous software version before installing the current software. Refer to the "Removing Symposium TAPI Service Provider Software" section located in Chapter 8 for detailed information on removing the Symposium TAPI Service Provider software. This procedure is outlined in the "Installing the Symposium TAPI Service Provider Software" section located in this chapter

5. Configure the Symposium TAPI Service Provider for Meridian 1. This procedure is detailed in Chapter 3.

6. Run the Microsoft TAPI Browser or the Microsoft Dialer to verify the Symposium TAPI Service Provider is up on the Windows NT Server. Install and configure TAPI-compliant application(s). Refer to the application's user documentation.

7. Upgrade the Microsoft TAPI to 2.1. (Refer to Chapter 4 of this document for detailed information.)

8. Configure the TCMAPP. (Refer to Chapter 4 of this document for detailed information.)

CLAN Configuration Information

Networking with the Symposium TAPI Service Provider for Meridian 1 over a Customer's LAN (CLAN) requires special consideration. An example of this type of networking is when using the Meridian Link on the Symposium Call Center Server (SCCS) which functions only on the CLAN. It is important to configure the TAPI Service Provider on as quiet a CLAN as possible. When the CLAN contends with heavy traffic, certain Symposium TAPI Service Provider for Meridian 1 functions, such as screen-pops, may not function properly. Restricting all unnecessary data traffic from reaching the Symposium TAPI Service Provider enhances performance and reduces wasted processing time.

Isolated CLAN

One option for configuration is the Isolated CLAN. Isolating the Symposium TAPI Service Provider for Meridian 1 from the SCCS server and the CLAN on an isolated CLAN helps restrict traffic to the TAPI Service Provider.

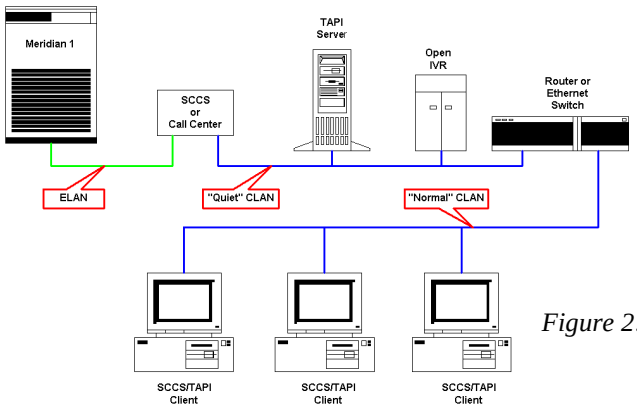


Figure 2: Isolated Clan Diagram

In the Isolated CLAN configuration, the M1 and the SCCS are on the ELAN, which is isolated because the SCCS is not acting as a Router. The Isolated CLAN carries only telephony centric traffic or involves either the SCCS CLAN NIC or Symposium TAPI Service Provider. The Router assures this limited traffic as it passes any messaging from the client machines destined for either the SCCS or Symposium TAPI Service Provider The Meridian 1 is hardware-equipped with an Ethernet controller on each of the Input/Output Processor (IOP) cards. The Ethernet interface is provided by the IOP pack with an AUI cable on the back panel. A unique Ethernet address must be assigned to the Ethernet controller on the IOP card.

Installation Summary of the Direct Connect Option

On a single CPU M1 system there is only one IOP, which contains an Ether-net interface. Single CPU systems use only a Primary IP address. On a redundant or dual CPU M1 system, two IP addresses must be specified: Primary and Secondary. Normal operation uses the Primary IP address. Split mode operation uses the Secondary IP address.

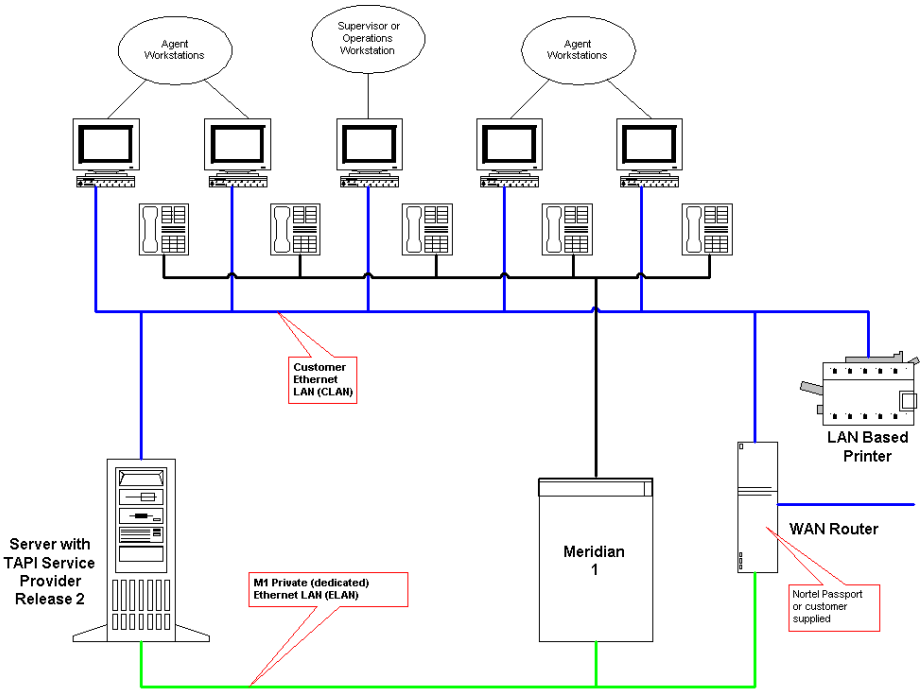


Figure 3: Direct Connect

All Meridian 1 devices for system access and control use the Meridian 1 private Ethernet. An internal gateway must be used to isolate the Meridian 1 private Ethernet from the customer LAN. Routing information is required if an Internet gateway or router connects a Meridian 1 private network to the customer's LAN.

The Meridian 1 dynamically assigns ELAN connections. Each application connects to ELAN using the IP address and Port number 8888. The Meridian 1 assigns the appropriate ELAN address for each application. Resources for the Direct Connect option are acquired by Associated sets (AST). All unsolicited messages (USM) are supplied for acquired DNs. ACD DNs are acquired for monitoring ACD Queues.

This is an example of an ELAN configuration.

Direct Connect Option Baseline Requirements

TAPI Service Provider Direct Connect Option works in conjunction with Meridian 1 C-processor based systems (11C, 51C, 61C, 81, 81C). Other hardware and software requirements include:

- X11 Release 23.30 or above
- Symposium TAPI Direct Connect Option.
- ELAN connection (there is only one ELAN per Meridian 1 - if you already have the Meridian Administration Terminal (MAT) 5 or above connected to the system via ELAN, no other hardware is required.
- Ethernet Cable (NT7D90DA)- to connect from the Ethernet port on the backplane of the NT5D21 CoreNet, NT6D60 Core, or NT9D11 CoreNet Module to J23 at the module I/O panel.
- IOP (NT6D63BA) or IOP/CDMU (NT5D20BA) card - to configure an Ethernet port on the Meridian 1 system.
- Dedicated LAN

Overview of the Direct Connect Option Installation Process

Verify that all baseline requirements are met. It is important to follow the list of procedures in the order they appear.

1. Verify that Windows NT 4.0 (with a minimum of Service Pack 4 installed) or greater server is installed and running, that all user IDs and passwords are configured properly, and that users can log in to the TAPI NT server.

2. Configure to support Direct Connect.

3. Each telephone DN monitored by the TAPI Service Provider needs to have the AST configured to the value of the key using LD 11. For example, if the keys you choose to control are 00 and 03, set the values for 00 and 03. To have other TAPI Service Provider call control features, such as transfer and conference, they must be programmed on the set.

Note: Defining a VSID in LD 23 (ACD) is not possible when using the Direct Connect option. When an event such as an incoming ACD call occurs, a message reflecting this activity is sent on the AML/ELAN without a VSID defined in LD 23. The AML/ELAN value range is 16-31.

4. Configure the hardware for the Ethernet Port. Refer to the "Hardware Configuration for the Ethernet Port" section.

5. Configure the software for the Ethernet Port. Refer to the "Software Configuration for the Ethernet Port" section.

6. Install the Security Device supplied with the Symposium TAPI Service Provider. The TAPI Service Provider will not work if the Security Device is not installed. Refer to the "Installing the Security Device" section for detailed information.

7. Install the Symposium TAPI Service Provider software on the server.

Note: If you are upgrading from a previous version of the Symposium TAPI Service Provider for Meridian 1, be sure to remove the previous version of software before installing the current software. Refer to the "Removing Symposium TAPI Service Provider Software" section located in Chapter 8 for detailed information on removing the Symposium TAPI Service Provider software.

This procedure is outlined in the "Installing the Symposium TAPI Service Provider Software" section located in this chapter

8. Configure the Symposium TAPI Service Provider for Meridian 1. This procedure is detailed in Chapter 3.

9. Run the Microsoft TAPI Browser or the Microsoft Dialer to verify the Symposium TAPI Service Provider is up on the Windows NT server.

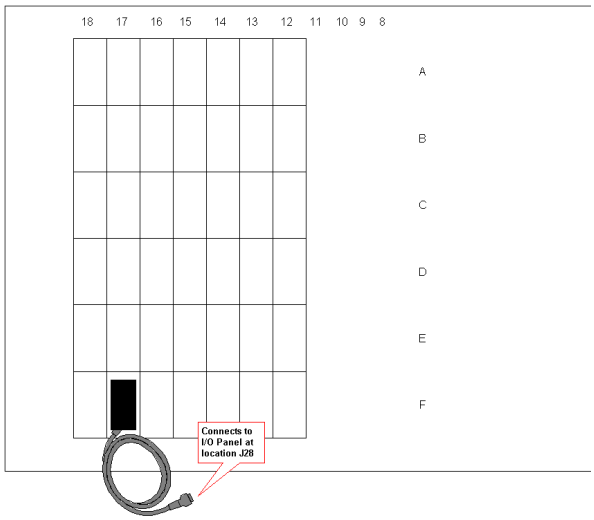
10. Install and configure TAPI-compliant application(s). Refer to the application's user documentation.

11. Upgrade the Microsoft TAPI to 2.1. (Refer to Chapter 4 of this document for detailed information.)

12. Configure the TCMAPP. (Refer to Chapter 4 of this document for detailed information.)

Hardware Configuration of the Ethernet Port

Follow these steps to hardware configure an Ethernet port on the Meridian 1 system:



1. For systems configured with the NT5D20BA, IOP/CMDU card:

- Identify the card slot location of the NT5D20BA, IOP/CMDU card in your system:

  A. In NT5D21 CoreNet Modules, the IOP/CMDU will be located in either slot 16, or slot 17.

  B. In NT6D60 Core Modules, the IOP/CMDU will be located in slot 16.

  C. In NT9D11 CoreNet Modules, the IOP/CMDU will be located in slot 16.

- Connect the NT7D90DA Ethernet cable to the backplane. Align the connector exactly with the bottom row of backplane pins.

    A. If the IOP/CMDU is installed in slot 17, connect the cable to the backplane at location 17FRelease 2• If the IOP/CMDU is installed in slot 16, connect the cable to the backplane at location 16F.

2. For systems configured with the NT6D63BA, IOP card :

    - Confirm the card slot location of the NT6D63BA, IOP card in your system:

        A. In NT6D60 Core Modules, the IOP is located in slot 16.
        B. In NT9D11 CoreNet Modules, the IOP is located in slot 16.

3. Connect the NT7D90DA, Ethernet Cable to the backplane. Align the connector exactly with the bottom row of backplane pins:

    - Connect the cable to the backplane at location 16F.

4. Connect the 10BaseT connector on the NT7D90DA cable to the module I/O panel at location J28.

5. For a dual CPU machine, repeat steps 1-3 above to configure the Ethernet port in the second CPU.

Note: Additional equipment is required to configure and connect the MAT Release 5 application to the Ethernet port at the I/O panel. Please refer to the MAT Release 5 Common Services User Guide Release 5.0 (part number A0858266) for further detail.

Software Configuration of the Ethernet Port

Follow these steps to configure Ethernet ports in software for the Meridian 1 system:

1. LD117

2. NEW HOST M1SERVER_A 47.1.1.10

- (Where 47.1.1.10 is the IP address of the active IOP or IOP/CMDU card.)
- (Where M1SERVER _A is the host name for the IP address.)

3. CHG ELNK ACTIVE M1SERVER_A

4. CHG MASK 255.255.255.0

- (Where 255.255.255.0 represents the local subnet mask.)
- For a dual CPU machine, repeat the process for the backup, inactive, CPU:

5. LD117

6. NEW HOST M1SERVER_B 47.1.1.11

- (Where 47.1.1.11 is the IP address of the standby IOP or IOP/CMDU card.)
- (Where M1SERVER _B is the host name for the IP address.)

7. CHG ELNK INACTIVE M1SERVER_B

8. On the CPU card, push the button with the word "MAN INT" printed below it to manually Initialize (INIT) the system. This activates the newly entered IP address information.

The routing table supplies the Meridian 1 with the IP addresses of the gateway server so that the Meridian 1 can send return messages to the gateway for forwarding to the requesting client.

If you have a default gateway in the network, define the routing table by completing the following steps.

1. LD117

2. NEW ROUT 0.0.0.0 47.1.1.250

- Should be entered to identify the default route.)
- (Where 47.1.1.250 is the IP address of the gateway Release 2

Primary IP Address Procedures

Instructions are for the activation, validation, and recovery procedures for the Primary IP Address.

Primary IP Address Activation Procedure

Manually INIT the system to activate the connection to the IP address configured in OVL 117.

Note: A manual initialization must be performed to establish a connection to the primary IP address. Once the connection is established, another manual initialization is required only if the primary IP address is changed, or if the revised parallel upgrade process is not followed.

Primary IP Address Validation Procedure

Follow this procedure to validate that the primary IP address is active. The technician compares the IP configured in overlay 117 with the actual IP used in overlay 137. If these two IP addresses are identical, then the system is using the correct IP address. Otherwise, the IP address is invalid, and the recovery procedure needs to be performed. Refer to the "Primary IP Address Recovery Procedure" section for additional information.

Example:

Active host name and IP address: "PRIMARY_IP" "47.48.49.50"

Inactive host name and IP address: "SECONDARY_IP" "47.48.49.51"To Perform the Primary IP Address Validation Procedure:

1. Load overlay 117

>LD 117<cr>

OAM000

2. Type "PRT ELNK<cr>" to display the IP address configured.

=> PRT ELNK<cr>

ACTIVE ETHERNET: "PRIMARY_IP" "47.48.49.50"

; <= IP configured

INACTIVE ETHERNET: "SECONDARY_IP"

"47.48.49.51"

OK

3. Load overlay 137

>LD 137<cr>

CIOD000

4. Type "STAT ELNK<cr>" to display Ethernet and network status

.STAT ELNK<cr>

ELNK ENABLED

Ethernet (ln unit number 0):

Host: PRIMARY_IP Internet address: 47.48.49.50 ; <=actual IP used

Broadcast address: 47.48.49.255

Ethernet address: 00:00:75:32:1e:ca

Netmask: 0xff000000; Subnetmask: 0xfffff000

33520 packets received; 12308 packets sent

0 input errors; 0 output errors

0 collisions

Primary IP Address Recovery Procedure

If the connection to the Primary IP Address as configured in OVL 117 is lost, it can be reestablished by following the steps:

1. Manually INIT the system to reestablish a connection to the primary IP address.

2. Perform the "Primary IP Address Validation Procedure" (see section 6.0 above) to confirm the Ethernet connection.

Revised Parallel Upgrade Procedure

The Parallel Upgrade procedure must be followed to ensure the primary IP address remains active following a software upgrade. Refer to the MAT Release 5 Common Services User Guide Release 5.0 (part number A0858266) for further detail.

To Perform the Parallel Upgrade Procedure:

1. The M1 is put into split mode with side 0 handling call processing.

2. Software install floppy is inserted in side 1 CMDU or IOP/CMDU.

3. Side 1 is sysloaded to enter software installation.

Note: At this point, side 1 takes the secondary IP address as its active IP address, since side 0 still has control over the primary IP address. Software install is completed on side 1.

4. Call processing is switched from side 0 to side 1 by completing the following steps:

    - Faceplate disable the IOP or IOP/CMDU card on side 0 (this relinquishes side 0 control over the primary IP address).
    - Faceplate disable the CNI cards in side 0.
    - Faceplate enable the CNI cards in side 1.
    - INIT side 1, to switch call processing from side 0 to side 1.

Note: At this point, side 1 seizes control of the primary IP address

5. Insert the software install floppy is in side 0 CMDU or IOP/CMDU.

6. Faceplate enable the IOP or IOP/CMDU card on side 0.

7. Sysload Side 0 to enter software installation.

    - Continue with software installation on side 0, and complete the remainder of the parallel upgrade.
    - Once back in redundant mode, an INIT (planned, or unplanned) results in the active CPU seizing the primary IP address.
    - Upon switchover, the primary IP address is seized by the new active (the former standby) CPU.

Table 1: Sample Meridian POs

LD 117			LD 22		VSID 18
PRT HOST			REQ PRT TYPE ADAN		DLOP
ID Hostname	IP Address				ELAN 18
1 LOCAL_PPP_IF **2 REMOTE_PPP_IF** **3 SECONDARY_IP** 4 OPTION 61C	**137.135.192.4** 100.1.1.1 47.106.100.2 47.106.100.1		ADAN ELAN 16		SECU YES
			CTYP	ELAN	INTL 0001
			DES	NUMBER 1	MCNT 9999
			N1	128	VSID 19
			ADAN ELAN 17		DLOP
STAT HOST Active Internet Host Table			CTYP	ELAN	ELAN 19
			DES	elan2	SECU YES
ID Hostname	IP Address		N1	512	INTL 0001
Localhost	127.0.0.1		ADAN ELAN 18		MCNT 9999
1 LOCAL_PPP_IF **2 REMOTE_PPP_IF** **3 SECONDARY_IP** **4 OPTION 61C**	**137.135.192.4** 100.1.1.1 47.106.100.2 **47.106.100.1**		CTYP	ELAN	VSID 20
			DES	edlan3	DLOP
			N1	512	ELAN 20
			REQ PRT TYPE VAS		SECU YES
PRT MASK SUBNET MASK: "255.255.240.0"					INTL 0001
			VISD 16		MCNT 9999
LD 137			DLOP ELAN 16 SECU YES INTL 0001 MCNT 9999		LD 48
STAT ELNK ELNK ENABLED					STAT ELAN
					SERVER TASK: ENABLED
Ethernet (In unit number 0) Host: OPTION61C Internet address: 47.106.100.1 Broadcast address: 48.106.111.255 Ethernet address: 00:00:85:32:31:ad Netmask: 0xff000000; Subnetmask: xfffff000 81212 packets received; 99819 poackets sent 0 input errors; 0 output errors 0 collisions					ELAN#:.16 DES: NUMBER 1
					APPL_IP_ID: 47.106.100.255LYR7: ACTIVE EMPTY
			VSID 17		ELAN#: 17 DES: edlan2
			DLOP ELAN 17 SECU YES INTL 0001 MCNT 9999		APPL_IP_ID: 47.106.100.50LYR7: ACTIVE EMPTY
					ELAN #: 18 DES: edlan3
					APPL_IP_ID: 47.106.100.50LYR7: ACTIVE EMPTY APPL ACTIVE
					ELAN #: 19 DES: elan4
					APPL_IP_ID: 0.0.0.0LYR7: DOWN DSBL
					ELAN #: 20 DES: elan 5
					APPL_IP_ID: 0.0.0.0LYR7: DOWN DSBL

Installing the Security Device

The Security Device must be installed on the machine where the TAPI Service Provider is installed. If the Security Device is not attached the TAPI Service Provider for Meridian 1 will not run.

The Security Device has a 25-pin connector at the end labeled ↑COMPUTER↑. This connector attaches to a parallel printer port of an IBM PC/XT/AT, PS/2, or true IBM-compatible computer.

The Security Device may be attached to any parallel port. Tighten the screws to connect the Security Device securely to the port. If a printer is connected to the computer, attach a shielded printer cable to the outside connector of the Security Device.

Figure 4: Security Dongle

If the computer is close to a wall or another obstacle, attach an extension cable to the port, then attach the Security Device to the cable. Use a straight through DB-25 male-to-DB-25 female cable.

Installing the Symposium TAPI Service Provider Software

Baseline requirements must be met before installing the Symposium TAPI Service Provider for Meridian 1 Release 2. If you are upgrading from a previous version of the TAPI Service Provider for Meridian 1, remove the previous version before installing the current version. Information is provided in the "Removing TAPI Service Provider Software" section located in Chapter 7. You must have administrative rights and be familiar with the TAPISRV operation to install this software. Before reinstalling Symposium TAPI Service Provider software, be sure that the TAPI SERV.exe (Telephony Services) is not running and that the Telephony Service has been stopped. Verify this by (1) accessing the Control Panel and (2) double-clicking the Services icon to display the *Services* dialog box.

Special installation instructions may be required if, after installing the Symposium TAPI Service Provider software, an upgrade or patch for the installed software needs to be installed. These instructions are contained in the Release Notes provided with the new software.

Note: TCP/IP must be configured and operational on both the Meridian 1 host link and on the TAPI Service Provider.

Installing the Symposium TAPI Service Provider for Meridian 1 Release 2 consists of (1) accessing the *Running Setup* dialog box, (2) selecting the type of installation you prefer, and before completing the installation, (3) selecting to view or not view the Readme.txt file. Choosing to view the Readme.txt file displays it on your desktop when the installation is complete.

1. Log on to the Windows NT Server.

2. Insert the Symposium TAPI Service Provider CD ROM into the CD ROM driver.

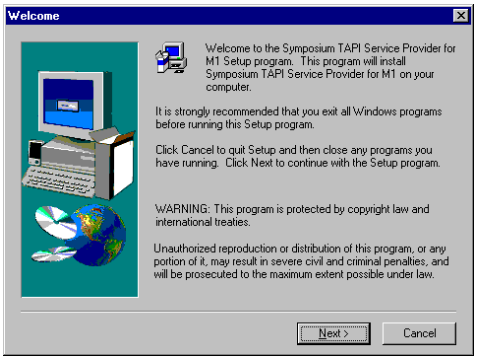
3. Select Run from the Start menu to display the Run dialog box.

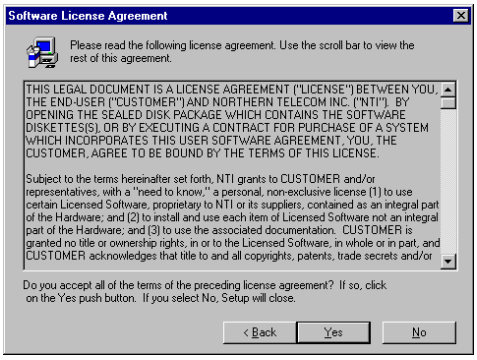
4. Type the CD ROM drive\setup.exe. For example, E:\setup.exe. Or, from the Windows NT Explorer window, click the CD ROM drive to display the folders and files.

   - Double-click the Setup.exe file.

The Meridian TAPI Service Provider installation process begins.

The Welcome screen opens, and the software license agreement screen is displayed.


Welcome
Welcome to the Symposium TAPI Service Provider for M1 Setup program. This program will install Symposium TAPI Service Provider for M1 on your computer.
It is strongly recommended that you exit all Windows programs before running this Setup program.
Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.
WARNING: This program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
Next >
Cancel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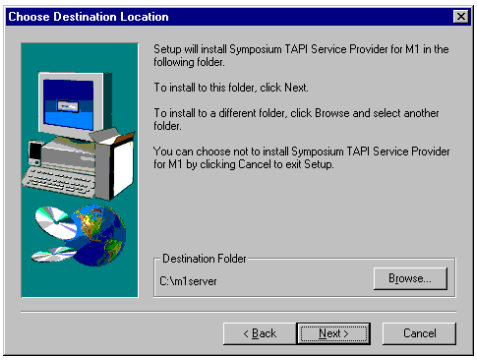
Do you accept all of the terms of the preceding license agreement? If so, click on the Yes push button. If you select No, Setup will close.
< Back
Yes
No

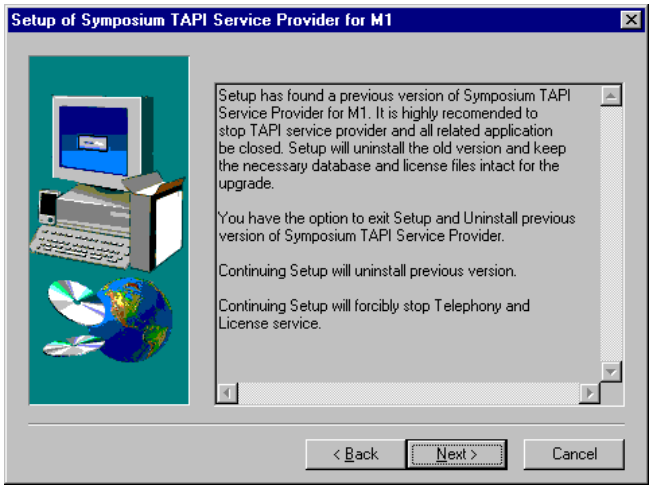
5. Click the Next > button to continue the installation process. The *Destination* dialog box opens


Choose Destination Location
Setup will install Symposium TAPI Service Provider for M1 in the following folder.
To install to this folder, click Next.
To install to a different folder, click Browse and select another folder.
You can choose not to install Symposium TAPI Service Provider for M1 by clicking Cancel to exit Setup.
Destination Folder
C:\m1server
Browse...
< Back
Next >
Cancel

Or

To cancel the installation at any time, Click the Cancel button located on any installation dialog box

Note: This screen may appear if Setup detects another version of the software.

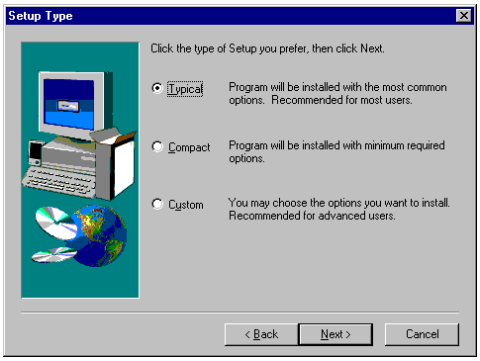

Setup of Symposium TAPI Service Provider for M1
Setup has found a previous version of Symposium TAPI Service Provider for M1. It is highly recomended to stop TAPI service provider and all related application be closed. Setup will uninstall the old version and keep the necessary database and license files intact for the upgrade.
You have the option to exit Setup and Uninstall previous version of Symposium TAPI Service Provider.
Continuing Setup will uninstall previous version.
Continuing Setup will forcibly stop Telephony and License service.
< Back
Next >
Cancel

6. When the appropriate action is completed, click **Next**.

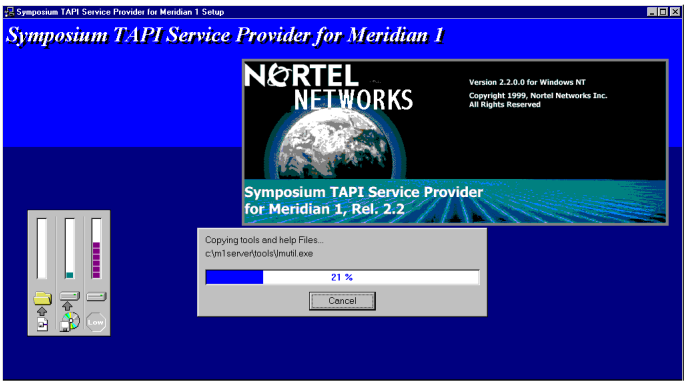
The *Setup Type* dialog box displays

7. Click in the Radio button to select the type of Symposium TAPI Service Provider to install.

The default is Meridian Link/SCCS Link.


Setup Type
Click the type of Setup you prefer, then click Next.
Typical
Program will be installed with the most common options. Recommended for most users.
Compact
Program will be installed with minimum required options.
Custom
You may choose the options you want to install. Recommended for advanced users.
< Back
Next >
Cancel

Click Next. Setup copies the files to the specified directory.


Symposium TAPI Service Provider for Meridian 1 Setup
Symposium TAPI Service Provider for Meridian 1
NORTEL NETWORKS
Version 2.2.0.0 for Windows NT
Copyright 1999, Nortel Networks Inc.
All Rights Reserved
Symposium TAPI Service Provider
for Meridian 1, Rel. 2.2
Copying tools and help Files...
c:\m1server\tools\mutil.exe
21 %
Cancel

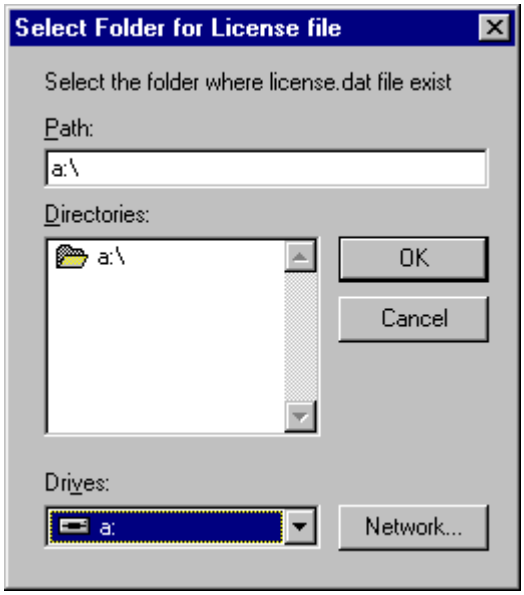
This screen tracks the copy process.

When the copying is complete, Setup automatically configures the Software License. If Set Up cannot locate the License file, this screen opens.

Symposium TAPI Service Provider for M1
License file necessary for software security doesn't exist in destination folder. Would you like to select another path?
Yes
No

Click **Yes.** The Select Folder for License File screen appears.

7. Click the Down arrow key in the *Drives* field to display and select the drive where the License file is located. When the correct drive letter appears in the *Path* field, click **OK.**



Set up searches the selected drive for the License file and automatically configures the settings. When this process is complete the Setup Complete screen opens.

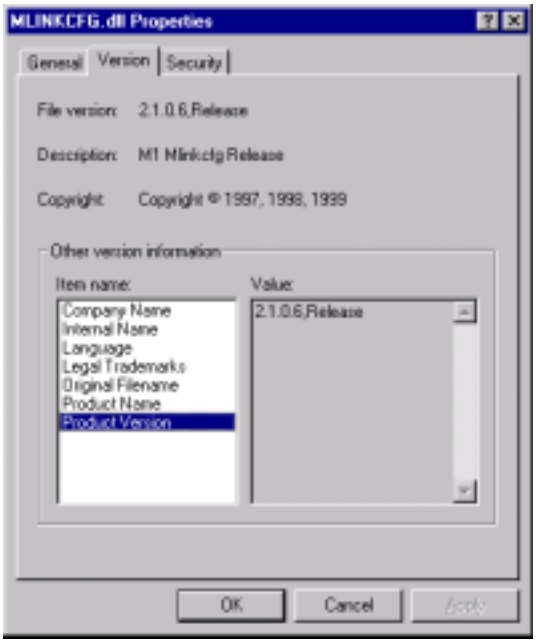
Click the Yes I want to view the README file check box to display the Readme.txt file on the desktop. The Readme.txt file includes valuable information on the Symposium TAPI Service Provider for Meridian 1 Release 2.2. We recommend that you read this file before configuring and using the Symposium TAPI Service Provider for Meridian 1 Release 2.2.

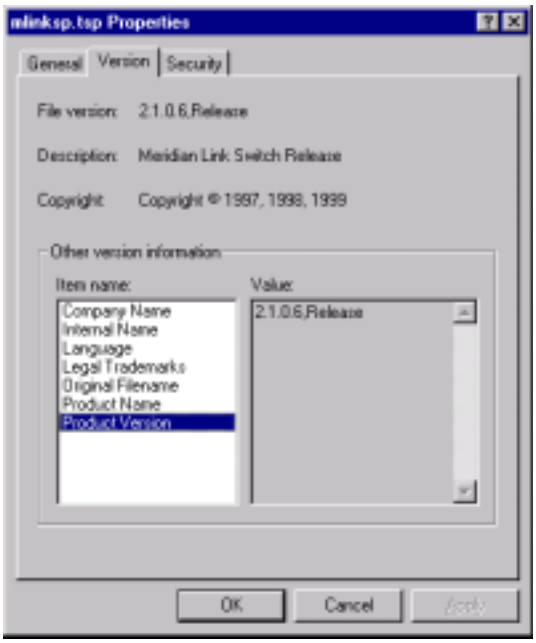
Click **Finish** to complete the installation process**.**

Verifying Product or Patch

To verify the product and/or patch currently installed:

1. Navigate to the drive where Windows NT is installed.
2. Select Winnt/system32 on the default drive
3. Find the following files:
   - linksp.tsp
   - mlinksp.cfg
4. Highlight either one of the files. Right click and select **Properties.** The window that opens should display information similar to the following.





Chapter 3: Configuring the Symposium TAPI Service Provider

An overview of the M1S Configuration application plus detailed information about the tasks necessary to configure the Symposium TAPI Service Provider.

M1S Configuration Application Overview

The M1S Configuration application populates and maintains the Symposium TAPI Service Provider database tables. These tables include entries for each controllable telephone. The M1S Configuration application contains a series of configuration dialog boxes that display the database information and allow you to add, modify, and delete this information. In addition, when you have multiple customer numbers (0 and 1), you may maintain customer information in separate databases.

Information is downloaded from the Meridian 1 switch to populate the Symposium TAPI Service Provider database. After the information is downloaded, the *M1S Configuration application* translates these files and populates the Symposium TAPI Service Provider database.

Accessing the M1S Configuration application displays the database information in the various configuration dialog boxes. These dialog boxes allow you to maintain the database tables by adding, modifying, or deleting the information contained in the fields.

Note: The Configuration application contains information that was downloaded from the Meridian 1 switch or information that was manually entered. Adding, modifying, or deleting information on the configuration dialog boxes does NOT affect the switch. Likewise, changes to the switch do NOT automatically change the information on the configuration dialog boxes (Symposium TAPI Service Provider database).

You may populate the Symposium TAPI Service Provider database tables manually without downloading the Meridian 1 switch files. You access the configuration dialog boxes and manually enter the information in the fields provided on the various configuration dialog boxes. Depending upon the number of phones your Windows NT server controls, the information required for the database tables may be extensive. In that case, manually populating the Symposium TAPI Service Provider database would be very time consuming.

The following Sections in this chapter assist you in configuring the Symposium TAPI Service Provider database:

- **Running the *M1S Configuration application*** - Information on starting the *M1S Configuration application*. This application accesses the *M1S Configuration* dialog box. This dialog box accesses the configuration dialog boxes and the Convert Text File tool used in the Automatic Configuration process.

- **Downloading the Symposium TAPI Service Provider Database Information** - Lists the steps needed to acquire the Meridian 1 switch information and adding the information to the database file.

- **Configuring the Symposium TAPI Service Provider Database Information** - Lists the steps needed to access the Symposium TAPI Service Provider Configuration dialog box. This dialog box accesses the configuration dialog boxes used to configure the database tables. The next sections contain detailed information on configuring each database table and the dialog boxes used to configure the database tables.

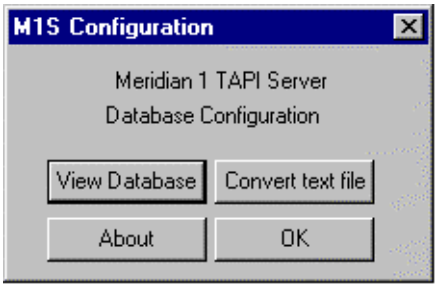
Running the M1S Configuration Application

Running the M1S Configuration application displays the M1S Configuration dialog box. In this box, push buttons access the configuration dialog boxes and the Convert Text File tool. The Convert Text File conversion tool is used during the Automatic Configuration process. The View Database button is used to access the configuration dialog boxes.

To Run the Configuration application:

Select the *Configure Database* program from the **Nortel Symposium TAPI Service Provider for M1** program group

The *M1S Configuration* dialog box appears.



Downloading and Translating Meridian 1 Switch Information Overview

The *M1S Configuration application* automatically translates and populates the Symposium TAPI Service Provider for Meridian 1 database tables from the downloaded Meridian 1 switch information. This saves valuable time when extensive information is required for the database tables. However, if you do not want to download information from the Meridian 1 switch, proceed to the "Manually Configuring the Symposium TAPI Service Provider for Meridian 1 Database Information" section in this chapter. That section contains the information needed to manually enter the required information.

Complete these steps to download and translate the Meridian 1 switch information. Each Step is covered in detail following this overview.

1. Create the configuration information text file (download.txt) that receives the information downloaded from the Meridian 1 switch overlay programs.

2. Download the switch configuration information to the configuration information text file (download.txt) created in the Step 1. This step captures the Meridian 1 switch configuration information. The Symposium TAPI Service Provider uses this information to control the telephone sets. The following overlay programs contain the Meridian 1 switch configuration information.

Table 1: Overlay Programs

Overlay Program	Request	Type This	To Do This:
Overlay 20 (LD 20)	PRT	TNB	List all used Terminal Number Blocks
Overlay 21 (LD 21)	PRT	RDB	List Route Data Blocks (Customer number and route number)
Overlay 23 (LD 23)	PRT	CDN	List all Control Directory Number blocks configured within the switch.

3. Convert the text file (download.txt) and populate Treatment, TN, DN, Phone Style and CDN tables in the database with the information obtained from the switch.

Step 1: Create the Switch Configuration Information Text File

1. Create a text file (download.txt) using Notepad.exe or another text file editor.
2. Save the text file in the c:\M1Server directory.

Step 2: Download the Switch Configuration Information

1. Connect to your Meridian 1 switch (either remote or direct) using the Terminal.exe or the Hyperterminal.exe program included in Windows NT. The Terminal application uses a baud rate of 1200 to dial the modem number of your Meridian 1 switch.

The *Port Settings* dialog box is displayed (for demonstration purposes, this dialog box is from the Hyperterminal.exe program).

2. Log on to the switch.

3. Save the switch configuration information to the download.txt file (created in Step 1: Creating the Switch Configuration Information Text File).

4. Select the **Transfers** menu:

A. If using the Terminal.exe program Select the **Receive Text File** option. Alternatively, if using the Hyperterminal.exe, select the **Capture Text** option program**.**

B. Select the download.txt file (located in the c:\M1Server directory).

Note: The commands listed in steps A., B., and C. are the relevant commands for this process. If other commands appear on your display. Press <Return> until a command listed in one of these steps is displayed.

C. Capture the LD 20 information:

- Wait for the Load 20 to finish. Often this is a lengthy process.
- Return to the ready (>) prompt.

Table 2: LD 20

At This Command	Type This Response
>	LD 20
REQ:	PRT
TYPE:	TNB

CUST	0 or customer number
~	
DES	<return>

D. Capture the LD 21 information:

- Wait for the Load 21 to finish. This is also a lengthy process.
- Return to the ready (>) prompt.

Table 3: LD 21

At This Command	Type This Response
>	LD 21
REQ:	PRT
TYPE:	RDB
CUST:	0 or customer number
~	
ACOD	<return>

E. Capture the LD 23 information:

- Wait for the Load 23 to finish. This can be a lengthy process.
- Return to the ready (>) prompt.

Table 4:LD 23

At This Command	Type This Response
>	LD 23
REQ:	PRT
TYPE:	CDN
CUST:	0 or customer number
~	
CDN	<return

5. Turn off the text file receive option**.** If you are using the *Terminal.exe* program, select the **Stop** button. Or

- If you are using the *Hyperterminal.exe* program, select the Capture Text Stop option on the **Transfers** menu.

6. Close the *Terminal* application . The server information is saved to the disk.

Step 3: Converting the Text File

1. Run the M1S Configuration application. Refer to the "Running the Configuration Application" section in this chapter. The *M1S Configuration* dialog box appears.

2. Click the **Convert text file** button. The *Open* dialog box is displayed.

3. Select the c:\M1SERVER\download.txt file and click the **Open** button. The *Text File Translator Status* dialog box is displayed.

4. Click the **Start** button.

5. When the file translation is complete, click the **Close** button.

Note: This process adds all downloaded Meridian 1 switch information to the Meridian TAPI Service Provider database. Certain information may be added that is not necessary or can be omitted. To accurately reflect your operating circumstances you must configure the database tables.

For example, if you are monitoring IVR ports Meridian 1 assumes they are analog, so they must be set on the *TN Table* dialog box or the Symposium TAPI Service Provider. The download process also downloads all CDNs that do not need monitoring. Any CDNs not used by this program must be deleted.

The M1S Configuration application contains configuration dialog boxes to view, add, modify, or delete the information contained in the Symposium TAPI Service Provider for Meridian 1database tables. Refer to the "Configuring the TAPI Service Provider Database Information" section for information on accessing the configuration dialog boxes.

Creating an Additional Database

This function is recommended for experienced database administrators only.

When you have multiple customer numbers (0 and 1), you can create an additional Symposium TAPI Service Provider database. Follow the same steps for downloading and translating the Meridian 1 switch information. However, the new database must have either a different name or be located in a different directory than the first database.

When downloading the switch configuration information, you must type the correct customer number; for example, type 1 instead of 0.

Note: If you create an additional database, be sure the correct database file is loaded before accessing the *M1S Configuration application* to view the database information. There is no way to switch databases after accessing the *M1S Configuration application*; you must close the Configuration application, reload the correct database file, and reopen the Configuration application.

Step 1. Accessing the Database Configuration Dialog Box

The *Database Configuration* dialog box accesses the dialog boxes needed to manually configure the database information.

1. Run the *M1S Configuration* application. Refer to the "Running the M1S Configuration application " section. The *M1S Configuration* dialog box is displayed.

2. Click the **View Database** button. The *Database Configuration* dialog box is displayed.

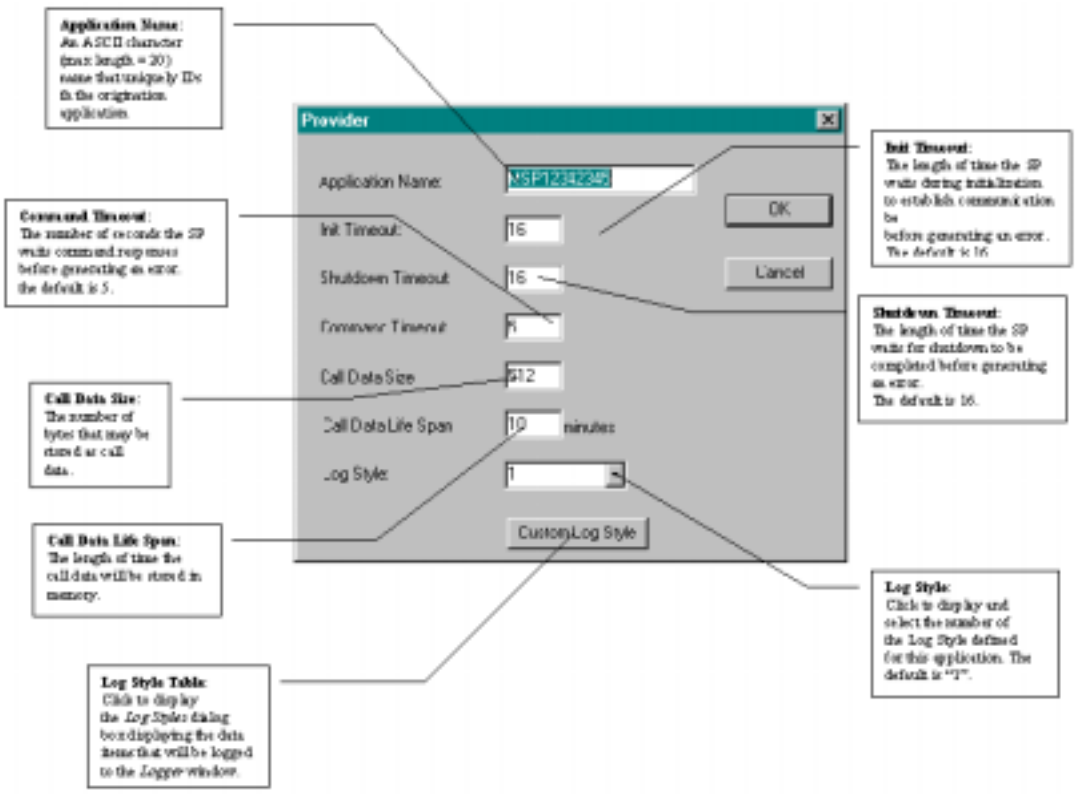
The *Database Configuration* dialog box buttons provide access to the following dialog boxes; in each table you may add, edit, or delete information as necessary.

Table 5: List of Dialog Boxes

Button	Dialog Box
Provider	*Provider* dialog box * Access to view the Log Style Table for the Treatment table
Host	*Host Table* dialog box Access to the Trunk Table Access to the *Treatment Table* dialog box - Access to the *TN Table* dialog box * Access to the *Phone Style* dialog box + View the Log Style Table for the LineStyle (Phone) table + View the Log Style Table for the Address Style (Phone) table * Access to the *DN Table* dialog box + View the Log Style Table for the DN table * View the Log Style Table for the TN table - View the *Log Style Table* dialog box for the Host table
Control DN	*CDN* dialog box
IVR	*IVR* dialog box
Log Styles	*Log Styles* dialog box

Step 2. Configuring the Provider Table

The *Provider* dialog box adds or modifies the Provider database information and displays information on the application currently registered with the Meridian Link Module. In addition, you may select the style in which this information is displayed in the *Logger* application for troubleshooting purposes. Two default styles (0 = no data items display, 1 = all data items display) are supplied. Refer to the "Configuring the Log Style Table" section for information on creating additional styles.


Application Name:
An ASCII character (max length = 20) name that uniquely IDs th the origination application.
Provider
Application Name:
MSP1231245
OK
Init Timeout:
16
Cancel
Shutdown Timeout:
16
Command Timeout:
5
Call Data Size:
512
Call Data Life Span:
10
minutes
Log Style:
1
CustomLog Style
Init Timeout:
The length of time the SP waits during initialization to establish communication to be before generating an error. The default is 16.
Command Timeout:
The number of seconds the SP waits command responses before generating an error. the default is 5.
Shutdown Timeout:
The length of time the SP waits for shutdown to be completed before generating an error. The default is 16.
Call Data Size:
The number of bytes that may be stored as call data.
Call Data Life Span:
The length of time the call data will be stored in memory.
Log Style:
Click to display and select the number of the Log Style defined for this application. The default is "1".
Log Style Table:
Click to display the Log Styles dialog box displaying the data items that will be logged to the Logger window.

Configuring the Provider Table requires three steps:

1. Access the *Provider* dialog box:

    - From the *Database Configuration* dialog box (refer to the "Accessing the *Database Configuration* dialog box" section):

2. Click the **Provider** button. The *Provider* dialog box is displayed.

To modify the *Provider* dialog box information:

- Click in the field to be changed and enter the information.

- Select the Log Style.
- Click the down arrow located in the *Log Style* field to display the available log styles.
- Click the desired style.

Clicking on the **Log Style Table** button displays the selected data items associated with the selected Log Style. Refer to the "Configuring the Table" for information on creating additional log styles.

3. Close the *Provider* dialog box:.

- Click the **OK** button to close the *Provider* dialog box and save the information. Or,
- Click the **Cancel** button to close the *Provider* dialog box and cancel any changes. The *Database Configuration* dialog box is displayed.
- Click the **OK** button to close the *Database Configuration* dialog box.. The *M1S Configuration* dialog box is displayed.
- Click the **OK** button to exit the *M1S Configuration application*. Or,
- Click a button to view another database table information.

Step 3. Configuring the Host Table

Use the *Host Table* dialog box to add or modify the Host/Machine/Association information contained in the database. The *Host Table* dialog box displays information about the Meridian Link and the Meridian 1 needed by the Symposium TAPI Service Provider. The buttons located at the bottom of the *Host Table* dialog box access additional dialog boxes for adding and maintaining specific database information.

Note: Adding, modifying, and deleting the information on the Treatment, TN, or *DN configuration* dialog boxes changes the information contained in the Symposium TAPI Service Provider database. This does not affect the Meridian 1 Switch or the set configuration. Likewise, changes to the switch configurations are not automatically reflected in the Symposium TAPI Service Provider database or on these dialog boxes.

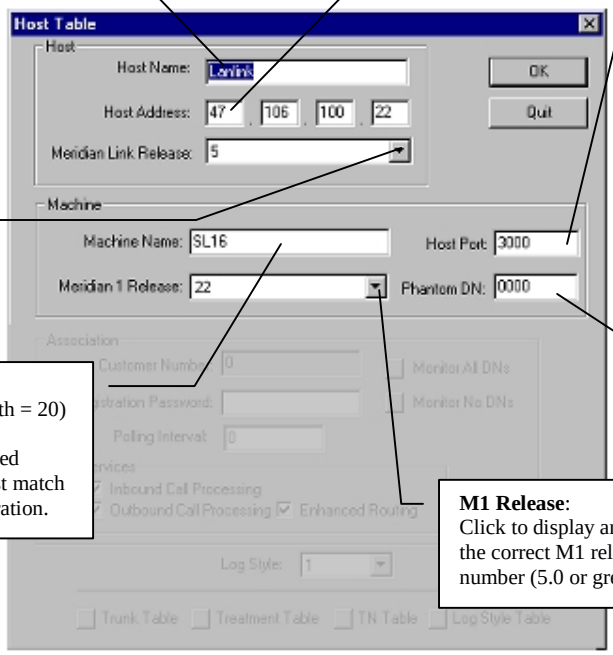
You may select which information style is displayed in the *Logger* application for troubleshooting purposes. Two default styles (0=no data items display, 1=all data items display) are provided. Refer to the "Configuring the Log Style Table" section for information on creating additional styles.

1. Access the *Host Table* dialog box:. From the *Database Configuration* dialog box (refer to the "Accessing the *Database Configuration* dialog box" section

Click the **Host** button. The *Host Table* dialog box opens.

Host Address:
The TCP/IP address of the host for the Meridian Link, SCCS Server, or Direct

Host Name:
A case sensitive ASCII character (max length = 20) that uniquely IDs the originating host. We recommend the default setting not be changed. The entry in this field must match the M1 Link configuration.



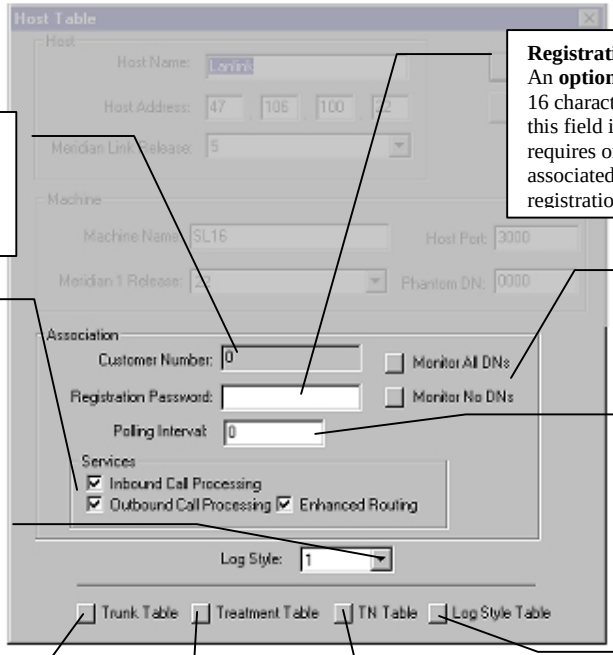
Host Port:
The host port number must match the one configured in the Meridian Link. For Meridian Link or SCCS, accept the default. For Direct Connect, type 8888.

Meridian Link Release:
Click to display and select the correct M1 release number.

Machine Name:
ASCII character (max length = 20) that uniquely IDs the M1 associated with the registered application. This entry must match the Meridian Link configuration.

Phantom DN:
A reserve DN configured on the switch for the call features Hold, Transfer, Redirect, or Conference.

M1 Release:
Click to display and select the correct M1 release number (5.0 or greater).



Registration Password:
An **optional** field for a 4-16 character string. Include this field if the application requires one to be associated with a specific registration.

Customer Number:
An integer that IDs the assigned customer number on the M1. The value range is 0 – 99.

Monitor All/No DNs:
Click the apporpriate button. The default is Monitor All.

Services:
Click the check boxes appropriate for the services associated with the application.

Polling Interval:
A HEX integer representing 10-secong units. For example, 1 = (10 seconds * 60) = 600 seconds.

Log Style:
Click to display and select the Log Style appropriate for the application. The default is "1", all events logged.

Log Style Table:
Displays the log Styles dialog box. Accessing this Table using this button is the only way to display the **Add** and **Delete** buttons for changing Log Styles.

TN Table:
Displays the TN Table dialog box. The TN dialog box allows access to the Phone Styles and DN Table dialog boxes.

Trunk Table:
Displays the Trunk Table dialog box.

Treatment Table:
Displays the Treatment Table dialog box.

Clicking **OK** after the **Host** table information has been completed saves the entered settings and returns to the *Database Configuration* dialog box. We recommend, however, that before leaving the **Host** table, you configure the **Trunk, Treatment, TN,** and **Log Style** tables. Select the table you want to configure from the buttons located at the bottom of the **Host** table. Details on configuring these tables follows, beginning with the **Trunk** Table.

Configuring the Trunk Table

The Trunk Table database information is used by Symposium TAPI service provider to monitor outbound trunk routing. Use the *Trunk Table* dialog box to add the route or routes to be monitored.

To monitor the trunk for the status events of answered and disconnected:

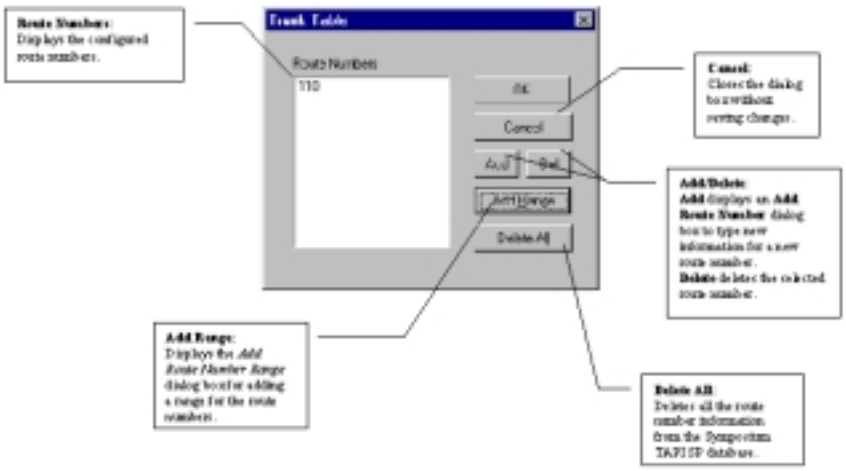
- On the Meridian 1, the trunk must be set up as AST.
- On the Meridian 1, IAPG must be set up to select the appropriate events (1 = all events).
- The *CTI* TAPI Server must register the trunk to be monitored.

The status change messages for the monitored trunk can only be sent when the trunk statuses are detected, that is, when the trunk is equipped with both answer and disconnect supervision. If a digital trunk interface is used, answer supervision and disconnect supervision are available. However, if a Universal trunk card is used, the SUPN prompt must be set to "yes" in Load 14 to allow answer supervision and disconnect supervision.

Note: Adding, modifying, or deleting a Route on this dialog box changes only the information contained in the Symposium TAPI Service Provider database. This does not affect the switch configuration.

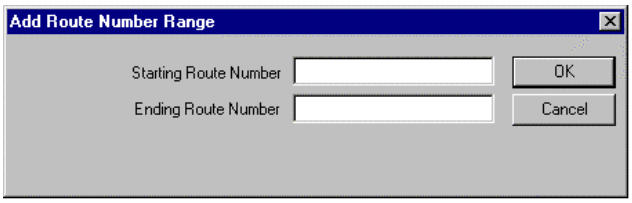
To Access the *Trunk Table* dialog box:

From the Host Table dialog box, click the **Trunk Table** button. The *Trunk Table* dialog box appears



Adding a Route Number Range

From the *Trunk Table* dialog box, click the **Add Range** button to display the *Add Route Number Range* dialog box.

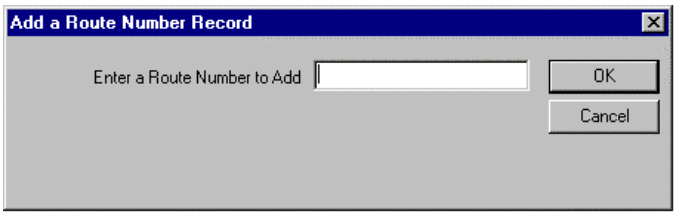


Enter the starting route number and the ending route number in the fields provided.

Click **OK**.

Adding a Route Number Record

From the *Trunk Table* dialog box, click **Add** to display the *Add Route Number Record* dialog box.



Enter the Route Number information for a new route.

Click **OK**.

Delete the Route Number Record

From the *Trunk Table* dialog box, click the Route number to highlight it and click **Del**. Or click the **Delete All** button to delete all Route numbers.

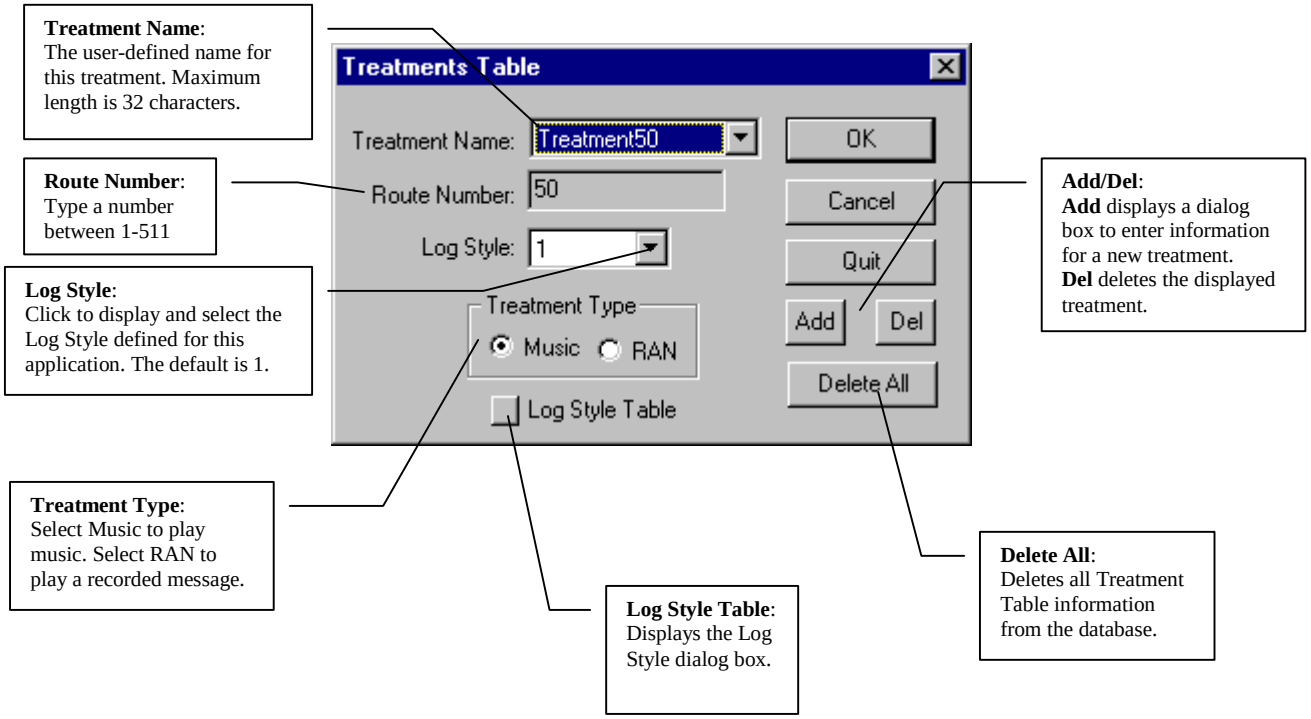
Configuring the Treatments Table Dialog Box

The Treatments database information is used by the routing application. The Treatments Table dialog box allows you to add a new treatment type.

Note: Adding or deleting a Treatment on this dialog box changes only the information contained in the Symposium TAPI Service Provider database. This does not affect the switch configuration.

To open the *Treatments Table* dialog box:

- From the Host Table dialog box, click the **Treatments Table** button. The *Treatments Table* dialog box is displayed.



Adding a New Treatment to the Treatments Database table

Click Add. The *Add a Treatment* dialog box appears. Type the new **number** in the field. Click **OK** to close the dialog box.

1. Type the Route Number.

2. Select **Log Style**.

3. Click **Log Style Table** to display the selected data items associated with the selected Log Style. Refer to the "Configuring the Log Styles Table" for information on creating additional log styles**.**

4. Click the **Music** or **RAN** radio button to select the Treatment Type.

Modifying the Information Associated with a Treatment name

1. Click the down arrow next to the *Treatment Name* field to display the list of treatments.

2. Click the treatment name you wish to edit. The treatment name appears in the *Treatment Name* field.

3. Make changes to Log style, or Treatment Type.

Deleting a Treatment from the Treatments Database table

1. Click the down arrow next to the *Treatment Name* field to display the list of treatments.
2. Click the treatment name you wish to delete. The treatment name appears in the *Treatment Name* field.
3. Click **Del** to delete the displayed treatment from the Treatments database table. Or-
   - Click **Delete All** to delete all Treatments from the Treatments database table.
4. Click OK to close the dialog box and save the changes. Or-
5. Click Cancel button to close the dialog box without saving the changes.

The *Host Table* dialog box is displayed.

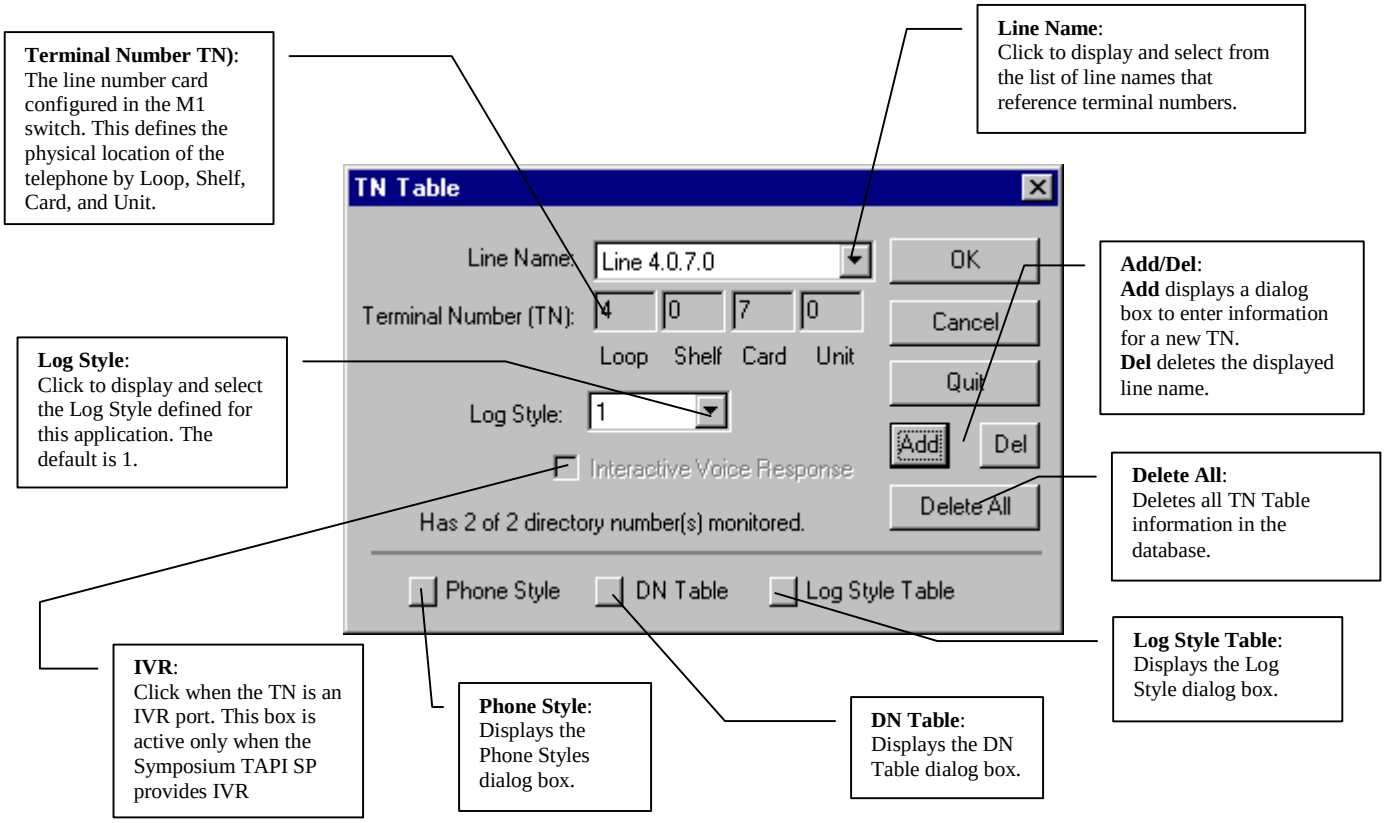
Configuring the TN Table Dialog Box

The *TN Table* dialog box reflects the TN and DN mappings within the switch. This dialog box allows you to create a user-defined reference for a terminal number in the TN database table. In addition, the *TN Table* dialog box provides access to the *Phone Styles* and *DN Table* dialog boxes.

Note: Adding, modifying, or deleting a TN on this dialog box changes only the information contained in the Symposium TAPI Service Provider database. *It* does not affect the switch configuration.

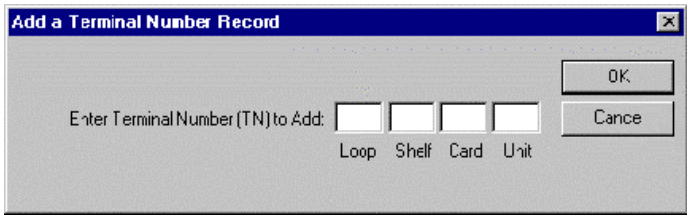
To Access the *TN Table* dialog box:

From the *Host Table* dialog box, click **TN Table**. The *TN Table* dialog box opens.


Terminal Number TN): The line number card configured in the M1 switch. This defines the physical location of the telephone by Loop, Shelf, Card, and Unit.
Line Name: Click to display and select from the list of line names that reference terminal numbers.
TN Table
Line Name: Line 4.0.7.0
Terminal Number (TN): 4 0 7 0
Loop Shelf Card Unit
Log Style: 1
Interactive Voice Response
Has 2 of 2 directory number(s) monitored.
OK
Cancel
Quit
Add
Del
Delete All
Phone Style
DN Table
Log Style Table
Add/Del: Add displays a dialog box to enter information for a new TN. Del deletes the displayed line name.
Log Style: Click to display and select the Log Style defined for this application. The default is 1.
Delete All: Deletes all TN Table information in the database.
IVR: Click when the TN is an IVR port. This box is active only when the Symposium TAPI SP provides IVR
Phone Style: Displays the Phone Styles dialog box.
DN Table: Displays the DN Table dialog box.
Log Style Table: Displays the Log Style dialog box.

Adding a Terminal Number to the TN Database Table

1. Click the **Add** button. The *Add a New Terminal Number Record* dialog box opens.



2. Type the Loop, Shelf, Card, and Unit numbers.

Note: Loop, Shelf, Card, and Unit numbers identify the physical location of hardware in the Meridian 1 switch. See your switch administrator for additional details.

3. Click the **OK** button. The TN Table dialog box is displayed.
4. Select the Log Style for the TN
5. Access the Phone Style and DN Table dialog boxes and add or modify the information associated with this Terminal Number.
6. Check the **Interactive Voice Response** check box, if applicable.

Deleting a Line Name from the TN Database Table

1. Click the down arrow next to the *Line Name* field to display the list of Line Names.
2. Click the **line name** you want to delete. The Line name displays in the *Line Name* field.
3. Click the **Del** button to delete the displayed Terminal Number from the TN Table in the database.

Deleting the TN Table Information from the Symposium TAPI Service Provider Database

1. Click **Delete All**.
2. Confirm the delete action on the *Confirmation* dialog box. The information is deleted.

Accessing Another *Configuration* Dialog Box

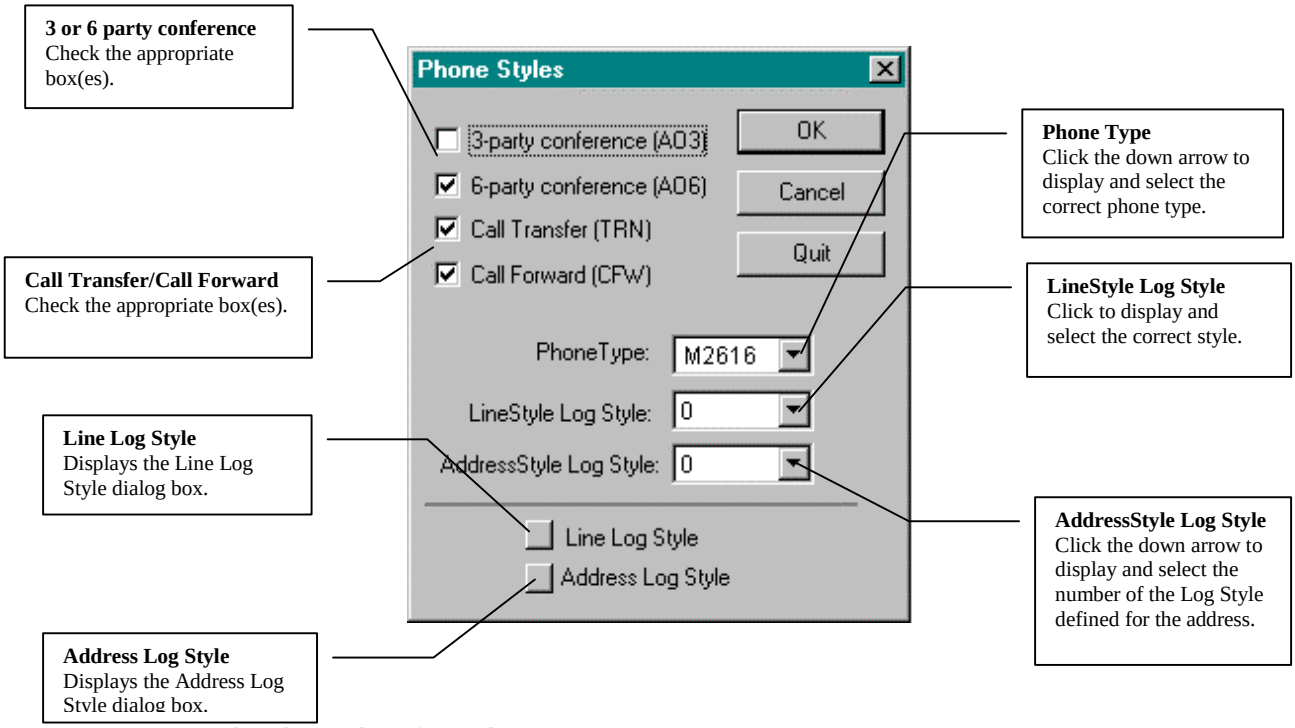
1. Select the desired Line Name. The Terminal Number is displayed.
2. Click the **Phone Style** or the **DN Table** button to access the dialog box associated with the button. • Refer to the "*Phone Style* dialog box" section or the "DN Table" section for detailed information on these dialog boxes.
3. Make additions or changes as necessary.
4. Click the **OK** button to close the dialog box and return to the *TN Table* dialog box.

Configuring the Phone Styles Dialog Box

The *Phone Styles* dialog box information is used for telephone configuration. This dialog box shows the TAPI controllable feature keys. You may select the options for the Terminal Number displayed on the *TN Table* dialog box.

To access the *Phone Styles* dialog box: from the *TN Table* dialog box, select the desired Terminal Number. The TN displays in the *Line Name* field.

Click **Phone Style** located on the bottom of the *TN Table* dialog box. The *Phone Styles* dialog box displays the information associated with the selected TN on the *TN Table* dialog box.



Setting the Options for a Phone Type

1. Click in the check boxes to select (with a check mark) or deselect (blank) the option.
2. Select the desired phone type.
3. Click the down arrow located next to the *Phone Type* field. The list of available phone types is displayed.
4. Click the desired phone type to select it.
5. Select the LineLog style and the Address Log style.

Closing the *Phone Styles* Dialog Box

1. Click the **OK** button to close the dialog box and save the changes, Or
   - Click the **Cancel** button to close the dialog box without saving the changes

The TN Table dialog box is displayed.

Configuring the DN Table

The *DN Table* dialog box is used for telephone configuration. This dialog box displays the DN information for the Terminal Number that is displayed on the *TN Table* dialog box. Use the *DN Table* dialog box to add or modify the DN database information. The *DN Table* dialog box presents one or two DNs. The limit of two AST keys per telephone also limits the number of DNs.

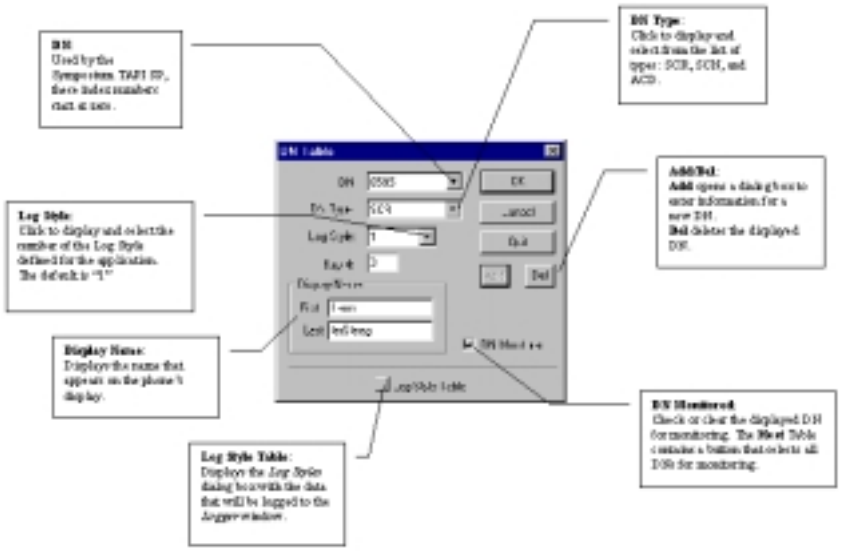
Note: Adding, modifying, or deleting a DN on this dialog box changes only the information contained in the Symposium TAPI Service Provider database. This does not affect the switch or the set configuration.

To Access the *DN Table* dialog box:

1. From the *Host Table* dialog box, click **TN Table**. The *TN Table* dialog box is displayed.

2. Click the **DN Table** button located on the bottom of the *TN Table* dialog box.

3. Select the desired TN. The selected TN is displayed in the *Line Name* field on the *TN Table* dialog box. The *DN Table* dialog box displays the information associated with the TN selected on the *TN Table* dialog box.



Adding a DN to the Database

1. Click the **Add** button. The *Add a Directory Number Record* dialog box opens.

2. Type the *Directory Number* and ***DN Type*** in the fields provided.

3. Click the **OK** button to close the *Add a Directory Number Record* dialog box. The new number displays in the *DN Number* field

4. Select the **Log Style** table and add or modify the other fields as required.

Changing the Information Associated with a DN

1. Click the down arrow next to the *DN* field to display the list DNs.

2. Click the DN you want to edit. The DN displays in the *DN* field.
3. Make changes as necessary.

Deleting a DN from the DN Database table

1. Click the down arrow next to the *DN* field to display the list of DNs.
2. Click the **DN** you want to delete. The DN displays in the *DN* field.
3. Click **Del** to delete the displayed DN from the *DN* Table in the database.

Closing the *DN Table* Dialog Box

1. Click the **OK** button to close the dialog box and save the changes. Or

    - Click the **Cancel** button to close the dialog box without saving the changes.

The TN Table dialog box is displayed.

Closing the *TN Table* dialog box

1. Click the **OK** button to close the dialog box and save the changes. Or

    - Click the **Cancel** button to close the dialog box without saving the changes.

The *Host Table* dialog box appears.

Configuring the Log Styles Table

The *Logger* troubleshooting application uses the information on the Log Styles table. Each data item has a logging style assigned to it. There are two default log styles that cannot be modified or removed: log style "0" logs no items, and log style "1" logs all items. For troubleshooting purposes, technical support personnel may request you to create additional log styles to trace specific data items. Use the *Log Styles* dialog box to create these additional styles.

Log styles are always numbered consecutively. For example, since numbers 0 and 1 already exist, the first log style you create is number "2". If you create additional log styles, they are numbered "3, "4", and so on.

When deleting log styles it is important to remember that the numbers are always numbered consecutively. For example, if you decide to delete the logging styles defined on log style "2" but keep the logging styles as defined on log style "3," deleting "2" moves the logging styles on "3" to the "2" position. This action also changes any dialog boxes that contained the log style"3" to "2.

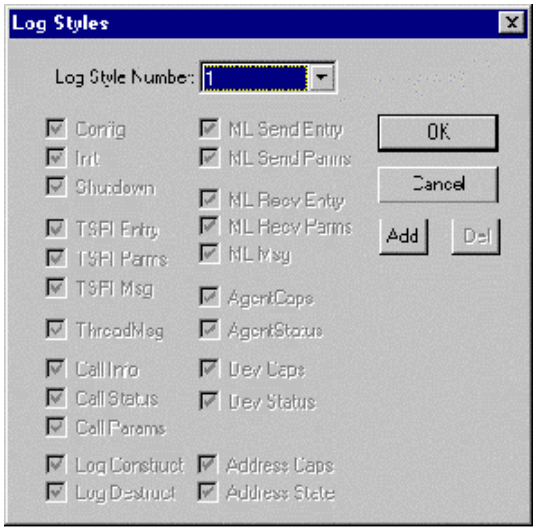
Accessing the *Logger* application and running a program displays the logging information in the format selected on the configuration dialog boxes. From the *Logger* window, this information is saved to the overflow file. Refer to the "The Logger Troubleshooting Tool "section in Chapter 7 for detailed information on the *Logger* application.

Note: You can view the *Log Styles* dialog box from many other dialog boxes. However, the add and delete options are available only when you access the *Log Styles* dialog box by selecting the Log Styles button on the *Meridian 1 TAPI Server Configuration* dialog box.

Accessing the *Log Styles* Dialog Box

From the *Meridian 1 TAPI Server Database Configuration* dialog box (refer to the "Accessing the *Database Configuration* dialog box section), Click **Log Styles table**. The *Log Styles* dialog box opens.

Note: Although the Log Styles **Table may also be accessed from several other tables and dialog boxes, the *Database Configuration* dialog box is the only location that displays the** Add **and** Delete **buttons for making changes**



Creating Additional Log Styles

1. Click **Add**. The next consecutive number is displayed in the *Log Style Number* field.
2. Click **OK**. The *Database Configuration* dialog box appears.
3. Click **Log Styles**. The *Log Styles* dialog box opens.
4. Click in the check boxes next to the data items you wish to have the *Logger* application log and display.
5. Click **OK**. The *Log Styles* dialog box closes and the changes are saved.

The new Log Style is now an option on the configuration dialog boxes.

Editing an Existing Log Style

Note: Styles O and 1 cannot be edited or deleted.

1. Click the down arrow next to the *Log Style Number* field to display the list of existing Log Styles.
2. Click the Log Style you wish to edit.
3. Click in the check boxes next to the data items you want to select or deselect. A check mark means the data item will be logged.
4. Click **OK**. The *Log Styles* dialog box closes and the changes are saved.

Deleting an Existing Log Style

1. Click the down arrow next to the *Log Style Number* field to display the list of existing Log Styles.
2. Click the Log Style you wish to delete.
3. Click **Delete**. The user-created Log Style is deleted.
4. Click **OK**. The *Log Styles* dialog box closes and the changes are saved.

Closing the *Log Styles* Dialog Box

1. Click **OK** to close the dialog box and save the changes. Or
   - Click **Cancel** to close the dialog box without saving the changes.

The *Host Table* dialog box is displayed.

If you have configured all the database tables accessed via the **Host** table as desired, close the *Host Table* dialog box.

1. Click **OK** to close the *Host Table* dialog box to save the information, Or

- Click **Cancel** to close the *Host Table* dialog box and cancel any changes.

The *Database Configuration* dialog box is displayed.

2. • Click **OK** to close the *Database Configuration* dialog box. The *M1S Configuration* dialog box is displayed. Or –

    - Click one of the buttons to configure another database.

3. • Click the **OK** button to exit the *M1S Configuration application*. Or click a button to view another database table information.

Exiting the M1S Configuration application

1. Click **Quit** to exit the M1S Configuration application The *M1S Configuration* dialog box is displayed.

2. Click **OK** to close the *M1S Configuration* dialog box and exit the M1S Configuration application

Step 4: Configuring the Control DN Table

The Control DN database information is used for host enhanced routing application. The *CDN* dialog box allows you to add or modify the Control DN information contained in the database.

In addition, you have the option to select the style used to display this information in the Logger application for troubleshooting purposes. Two default styles (0=no data items display, 1=all data items display) are provided. Refer to the "Configuring the Log Style Table" section for information on creating additional styles.

Note: Adding, modifying, or deleting a Control DN on this dialog box changes only the information contained in the Symposium TAPI Service Provider database. This does not affect the switch configuration.

To Access the *CDN* dialog box:

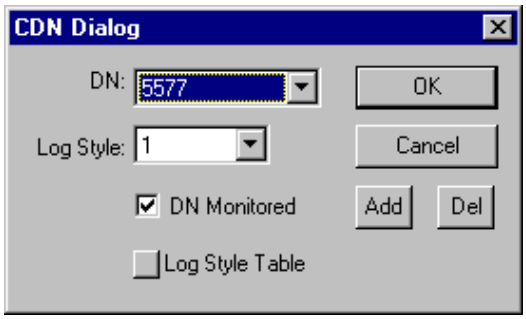
From the *Database Configuration* dialog box (refer to the "Accessing the *Database Configuration* dialog box" section): Click **Control DN**. The *CDN* dialog box is displayed.

Adding a New Control DN

1. Click **Add**. The *Add a Control Directory Number* dialog box displays.

2. Enter the new **Control Directory Number**.

3. Click **OK**. The *CDN* dialog box opens.



4. Select **Log Style table** and click the down arrow located in the *Log Style* field to display the available log styles.

5. Click the desired style.

A check mark in the check box means the option to monitor the DN is selected.

Modifying a Control DN

1. Click the down arrow located next to the DN field to display the available DNs.
2. Click the desired DN to select it. The selected DN displays in the DN field.
3. Make changes as required.

Deleting the Control DN

1. Click the down arrow located next to the DN field to display the available DNs.
2. Click the desired DN to select it. The selected DN appears in the DN field.
3. Click **Del**.

The selected Control DN is deleted.

Closing the *CDN* Dialog Box

1. Click **OK** to close the dialog box and save the changes. Or

Click **Cancel** to close the dialog box without saving the changes.

2. Click **OK** to close the *Database Configuration* dialog box. The *M1S Configuration* dialog box is displayed.

Step 5: Configuring the Interactive Voice Response Table

The IVR host table database information is used by the IVR Driver Task on Symposium TAPI Service Provider for two reasons. First, it uses the IVR Host port number to open a listening IVR port, this listening port is used by the IVR Module to register the IVR unit with the IVR Driver Task. This link later serves as the source for sending call data from the IVR Module. Second, information stored in the **Remote Host Address** table is used by the IVR Driver Task to request call data for inbound calls overflowed from any of the participating networked Meridian 1 switches. Please refer the IVR Driver Task section in chapter 5 for detailed information on function of IVR Driver Task.

To Access the *IVR Configuration* dialog box:

From the *Database Configuration* dialog box (refer to the "Accessing the *Database Configuration* dialog box" section): Click **IVR**. The *IVR Configuration* dialog box is displayed.

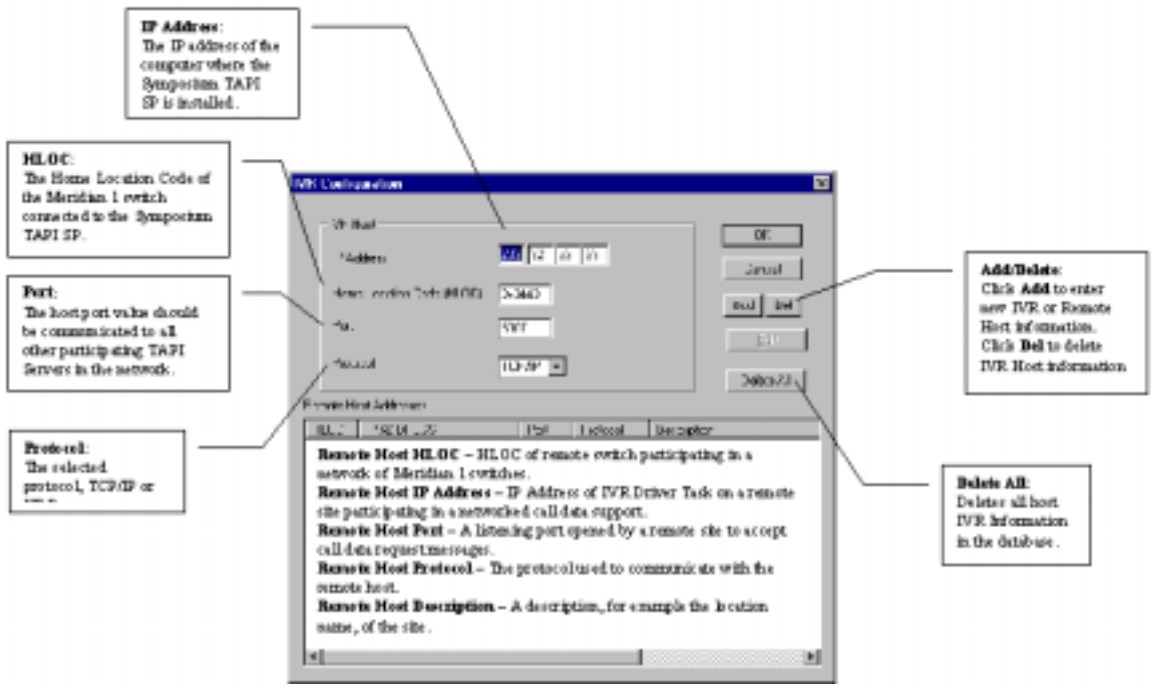
Adding a New IVR Remote Host Address

1. Click **Add**. The *Add Remote Host Address* dialog box displays.

2. Enter the values for IP Address, HLOC, Port and Protocol of the remote IVR Driver Task on Symposium TAPI Service Provider.

3. Click **OK**. You return to the *IVR Configuration* dialog box.

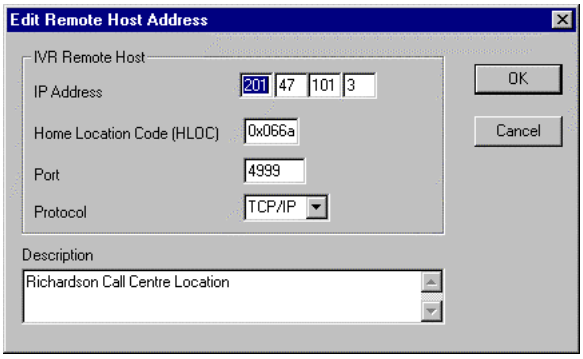
4. Click **OK** again to accept the changes in to database or **Cancel** to ignore the changes.


IP Address:
The IP address of the computer where the Symposium TAPI SP is installed.
HLOC:
The Home Location Code of the Meridian 1 switch connected to the Symposium TAPI SP.
Port:
The host port value should be communicated to all other participating TAPI Servers in the network.
Protocol:
The selected protocol, TCP/IP or
Add/Delete:
Click Add to enter new IVR or Remote Host information. Click Del to delete IVR Host information
Delete All:
Deletes all host IVR information in the database.
Remote Host HLOC – HLOC of remote switch participating in a network of Meridian 1 switches.
Remote Host IP Address – IP Address of IVR Driver Task on a remote site participating in a networked call data support.
Remote Host Port – A listening port opened by a remote site to accept call data request messages.
Remote Host Protocol – The protocol used to communicate with the remote host.
Remote Host Description – A description, for example the location name, of the site.

Modifying the IVR Remote Host Address

1. Select the entry to be modified from the **Remote Host Address** list control of the *Add Remote Host Address* dialog box.

2. Click **Edit**. The *Edit Remote Host Address* dialog box displays.



3. Modify the values that need to be changed.

4. Click **OK** to return to *IVR Configuration* dialog box.

5. Click **OK** again to accept the changes in the database or **Cancel** to ignore the changes.

Deleting an IVR Remote Host Address

1. Select the entry to be deleted from the **Remote Host Address** list control of the *Add Remote Host Address* dialog box.

2. Click **Del**. The selected entry is deleted from the **Remote Host Address** list control.

3. Click **OK** again to accept the changes to the database or **Cancel** to ignore the changes.

Deleting All IVR Remote Host Addresses

1. Click **Del**. The selected entry is deleted from the **Remote Host Address** list control.

2. Click **OK** again to accept the changes in the database or **Cancel** to ignore the changes.

Closing the *IVR* dialog box

1. Click OK to close the dialog box and save the changes or Cancel to close the dialog box without saving the changes.

2. Click OK to close the Database Configuration dialog box. The M1S Co*nfiguration* dialog box is displayed.

Chapter 4: Configuring the FlexLM License Manager

Nortel Networks uses the FlexLM License Manager supplied by GLOBEtrotter Software Inc. as the security software protecting the Symposium TAPI Service Provider from illegal use. Three components are required to validate and run the TAPI SP software.

1. FlexLM License Manager must be running on the same server as the TAPI SP is installed.

2. The License.dat file supplied separately from the installation CD must be provided when asked for by the FlexLM product.

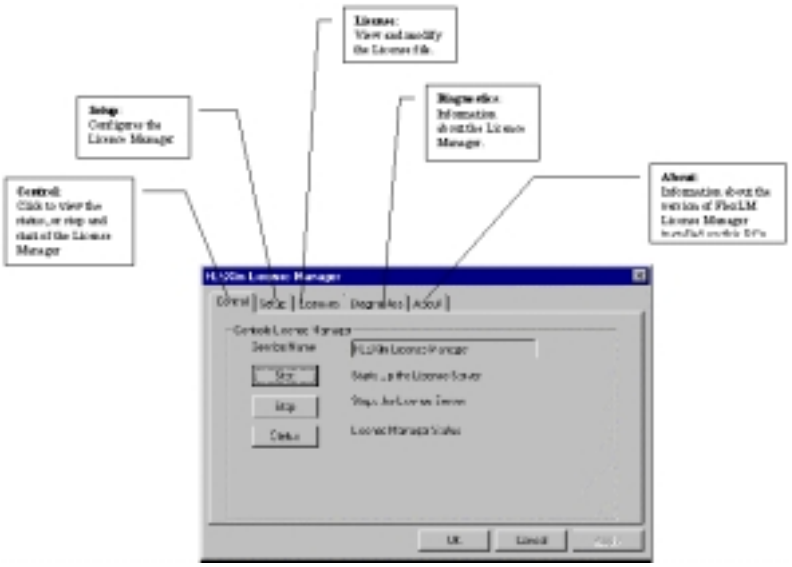
3. A security dongle supplied with the license file must be installed on the parallel port of the server.

This chapter contains information on automatically configuring the FlexLM License Manager during Installation Setup, or configuring the software manually after installing the TAPI SP software.

Troubleshooting tips for the FlexLM software can be found in Chapter 7 of this manual.

The FlexLM License Manager

The Symposium TAPI Service Provider setup automatically configures the FlexLM License Manager during installation. . If you did not configure the license file during installation, you can configure License Manager using Start/Programs/Nortel/Symposium TAPI Service Provider for M1/FlexLM Manager application, which is supplied as one of the software tools.



Accessing the FlexLM Manager opens the *FlexLM Manager* main window. The FlexLM Manager main window contains tab pages allowing you to configure the License Manager Server and the License file and to view other information regarding the Meridian 1 TAPI Service Provider license.

Installing the License File

The License file (License.dat) is automatically installed with the Meridian 1 TAPI Service Provider software. If you did not configure the license file at the time of installation, copy the license file to your installation target directory and use the setup dialog of FlexLM License Manager application to browse the license file location. We recommend that you make a back-up copy of the license file before configuring it.

Accessing the FlexLM License Manager Window

The FlexLM License Manager is accessed from the Windows Start/Programs/Nortel/Symposium TAPI Service Provider for M1 program.

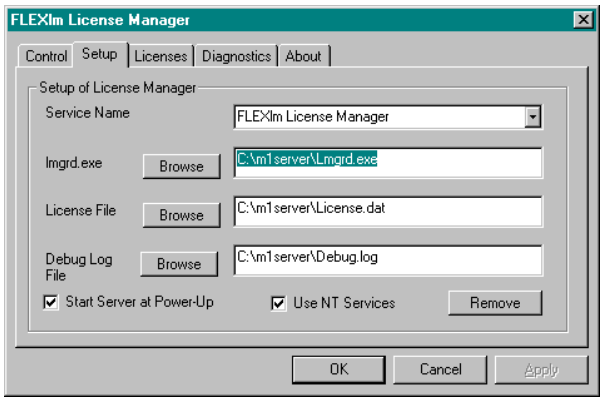
Select the *Symposium TAPI Service Provider for M1* menu option from the Windows Start/Programs/Nortel to display the sub options.

Click the FlexLM Manager option. The *FlexLM License Manager* main window opens.

Manually Configuring or Editing the License Manager after Installation

The License Manager is configured on the Setup tab page located on the *FlexLM License Manager* window.

Access the *FlexLM License Manager* window. Refer to the "Accessing the FlexLM License Manager Window" section.

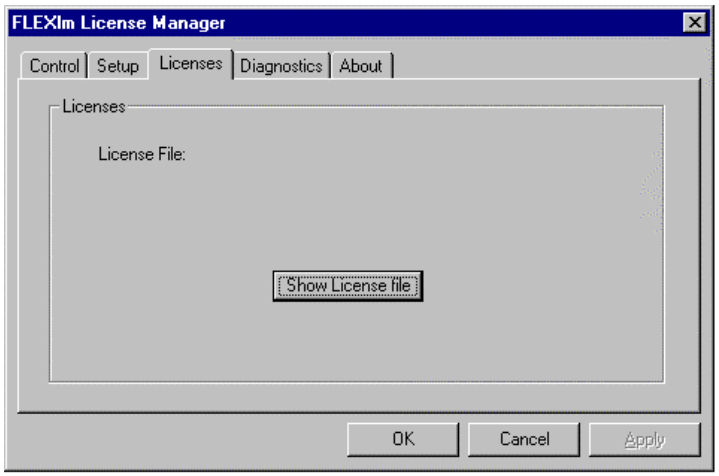


Click the Setup tab to display the *Setup* fields. Click the **Browse** button to locate the *lmgrd.exe* file. The default is the c:\M1Server directory. Click the **Browse** button to locate the License.dat file. This file is located in the directory where you copied it. The recommended location is the c:\M1Server directory.

Note: Clicking the Remove **button removes the License Manager from the NT Services. Unless the License Manager is started, the Meridian 1 AML Switch will not work. We recommend that you do not remove the License Manager from the NT Services.**
Configuring the License File

1. Access the *FlexLM License Manager* window. Refer to the "Accessing the FlexLM License Manager Window" section.

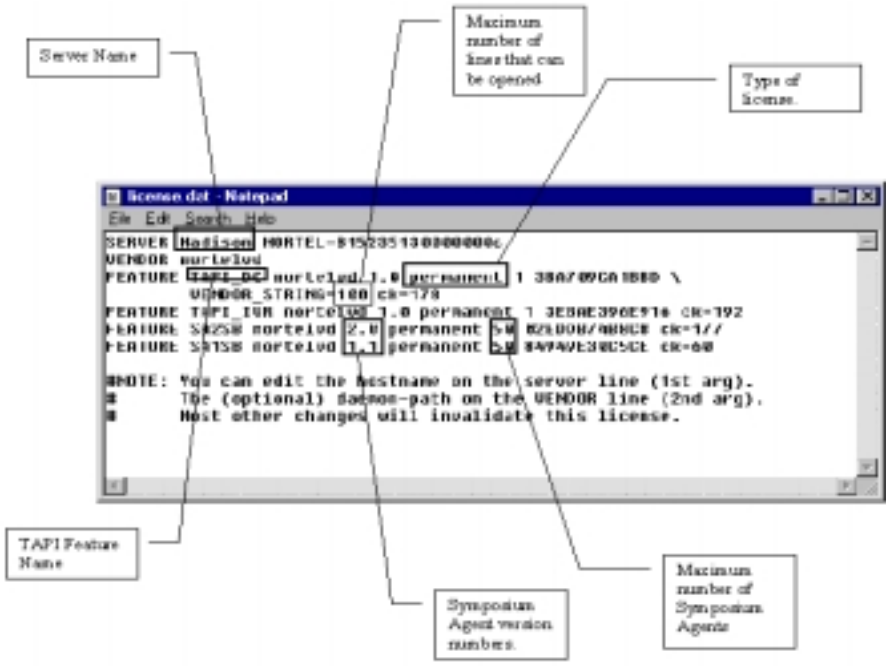
2. Click the Licenses tab to display the Licenses tab page.



3. Click the **Show License file** button to display the License.dat file**.**

Note: The example of the License provided above is for demonstration purposes only. Your license information will vary depending upon your purchase.

4.


Server Name
Maximum number of lines that can be opened
Type of license
license.dat - Notepad
File Edit Search Help
SERVER Madison MORTEL-815235130000000
VENDOR nortelvd
FEATURE TAPI_DC nortelvd 1.0 permanent 1 38A709CA1BBD \
VENDOR_STRING=100 ck=178
FEATURE TAPI_IVR nortelvd 1.0 permanent 1 3E8AE390E916 ck=192
FEATURE SA2SB nortelvd 2.0 permanent 5 0
FEATURE SA1SB nortelvd 1.1 permanent 5 0
#NOTE: You can edit the hostname on the server line (1st arg).
The (optional) daemon-path on the VENDOR line (2nd arg).
Most other changes will invalidate this license.
TAPI Feature Name
Symposium Agent version numbers
Maximum number of Symposium Agents

On the Server line, edit TSPMLINK to the name of your Host computer. This must be exact. If you do not know your Host computer name, refer to the "Viewing Additional License Manager Information" section.

Note: Edit only the field that you are instructed to edit. Editing other fields corrupts the License.dat file and the Symposium TAPI SP will not work.

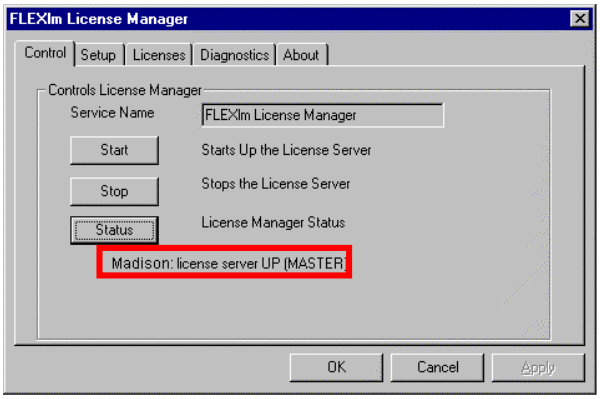
5. Select the Save option on the **File** menu to Save the changes. .

6. Select the **Close** option on the **File** menu to close the file.

Starting the License Manager Server

If you selected the Start Server at Power-up option on the Setup tab page, restarting you computer automatically starts the License Manager. However, after configuring the License Manager Server and the License.dat file, you may start the License Manager Server without restarting you computer.

1. Click the **Control** tab to display the Control tab page.
2. Click the **Start** button to start the License Manager Server.



3. Click the **Status** button to view the status of the License Manager Server. The License Manager Server status appears at the bottom of the screen.

Note: The server name in this example is for demonstration purposes only. The name that you see depends upon your host computer's name.

Viewing Additional License Manager Information

The Diagnostics and About tabs provide access to additional information about the License Manager.

1. Click the Diagnostics tab to display the Diagnostics tab page.

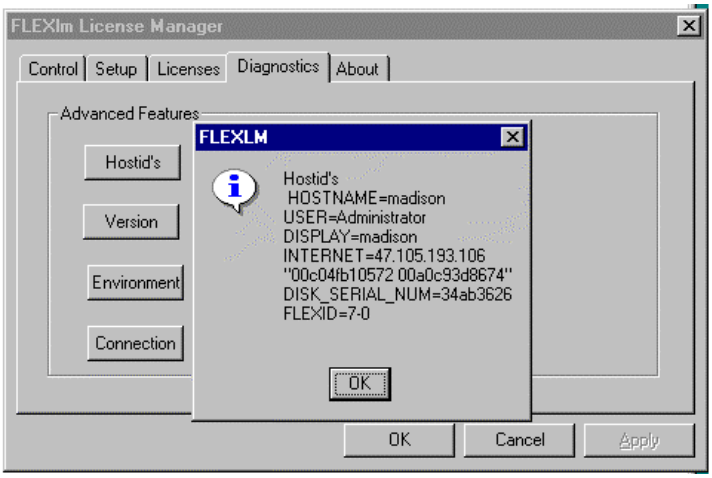
2. Click Hostid's to display the Host computer name and other information about the Host.

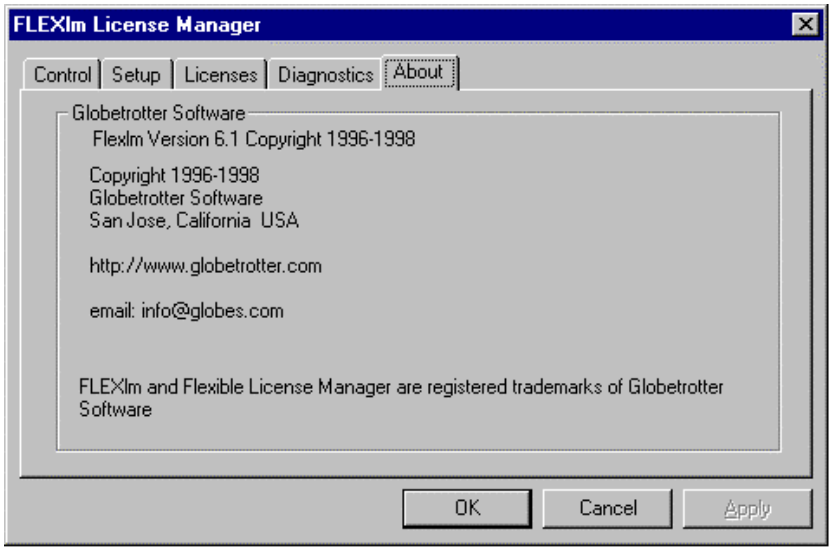
Note: The information displayed is for demonstration purposes only. The information you see depends upon your specific host machine.

3. Click **OK** to close the information box.

4. Click **Version, Environment,** or **Connection** to view the information provided.

5. Click the **About** tab to display information regarding the FlexLM Version you have installed.





6. Click the **OK** button to close the *FlexLM License Manager* window.

Chapter 5: IVR and Networking Call Data

Interactive Voice Response (IVR)

The IVR System collects data from a call and passes it to a TAPI application. There are two types of IVR Systems, (1) Nortel Symposium Open IVR and (2) third party IVR.

Note: Because the Nortel Symposium TAPI Service Provider supports Predictive Dialing and other Call Data applications, the IVR information in this document is not necessarily IVR specific. Except as noted, the information applies to Predictive Dialing as well as other applications.

If you are interested in developing an interface to the Symposium TAPI Service Provider from your IVR, contact Nortel CTI Developer's Support line at (800) NT4CTI0 for more details.

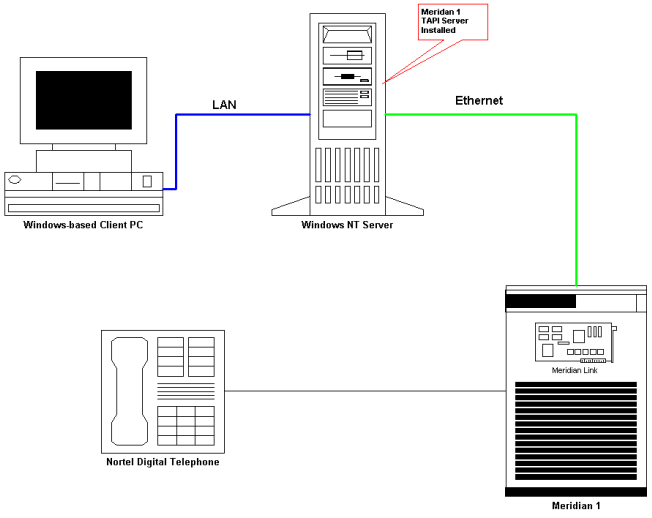
The IVR system collects data from incoming calls and passes it to the Symposium TAPI Server. The TAPI Server stores the call data by associating it with the Call ID. After the IVR system transfers the call and when the destination DN is offering, the TAPI server searches the stored data for a matching Call ID. If a match is found the TAPI Server passes the call data to the client.

IVR Module

The IVR module is a standalone process designed to run on both open and integrated Symposium IVR machines. It collects data sent from IVR call flows and then sends the data over an Ethernet connection to a TAPI Service Provider for further processing.

Tasks performed by the IVR Module include:

- Opening and maintaining socket communications with a PC based TAPI Service Provider, which collects information from the IVR and distributes it to multiple clients.
- Opening and maintaining message queues through which IVR call flows send gathered data to the IVR module via custom user function cells.



- Reading and distributing configuration parameters related to areas such as call monitoring and tracking.

The IVR Module executable may reside and execute in any directory. However, a configuration file, which must be called IVRmodule.cfg, must reside in the same directory

Note: Brief IVR Module information is provided for reference only in this document. For complete IVR information, refer to your IVR User Documentation.

IVR Configuration File

The IVR configuration file (IVRmodule.cfg) contains various configuration parameters. These parameters are listed one per line in any order and are identified by a keyword beginning on the first column of each line and followed by a space and the actual parameter value. The key-words include:

Table 1: IVR Configuration Parameter

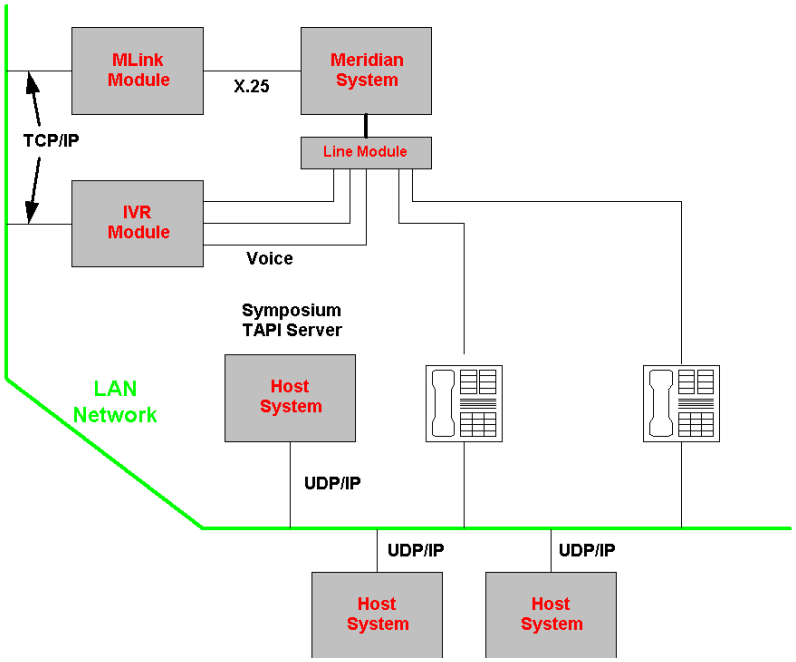
Keyword	Description	Operand
homehost name	Defines the name of the machine on which the IVR module resides and executes	Name is an alphanumeric string designated as the host name on your machine
externhost name	Defines the name of the machine on which the IVR driver resides and executes	Name is an alphanumeric string designated as the host name on your machine
portnumber n	Defines the port number on the externhost machine through which the IVR driver and IVR module are channeled	n is a numeric value usually in the range 1 –10000.
timeoutval n	Defines the maximum time in dule waits for response from the IVR driver indicating data transfer is complete and the call should be transferred. When this time period elapses, the IVR module automatically transfer the call. This value defaults to 20	n is a decimal value within the range 1 – 100
nwcallid b	This is set to YES, If network call ID is supported by IVR unit when transferring Caller's data to IVR Driver.	B is a boolean set to YES or NO.
monitordn nnnn	This IVR parameter is valid only if NO has been specified for the nwcallid parameter. This specifies a four digit extension of an incoming line to be monitored for call information. Any number of these extensions may be specified, listing one per line and always using the monitordn keyword. Although the configura tion options may be listed in any order, the monitordn listings must appear in numeric order by the channels to which they are assigned. In other words, the DN of the first channel assigned to this application must be listed first. The DN of the second chan-- nel assigned to this application must be listed second, and so on	nnnn is a four digit extension of an operator/agent's telephone
logduration n	Defines the number of days IVR log files remain in the directory with the IVR module executable before being deleted. This value defaults to 1.	n is a decimal value indicating number of days within the range 1 – 100

If a required configuration option is missing or contains syntax errors, the IVR module issues error messages in the current log file and fails to start. Refer to the "IVR Messages" section located in Chapter 8 for additional information on the error messages.

Note: The TCP/IP default port number on the host that TAPI Service Provider uses to communicate is 5000. This number is configurable.

IVR Module System Architecture

The following figure details the Meridian 1 system as it relates to the Host environment for digit collection and the call-transfer process.



IVR communication to the Symposium TAPI Service Provider should be on a dedicated LAN and not on the customer LAN. It may share the same LAN as the Meridian Link module

Meridian 1 and IVR Environment

The Meridian 1 PBX platform provides the telephony switching needs for this system configuration, while the Meridian Link module provides the call progress details needed to track the call and gather call information.

As shown in Figure 1(above) , the IVR Module is connected to the Meridian PBX providing caller input services. This unit is connected to the LAN Network, which allows packet data transfer.

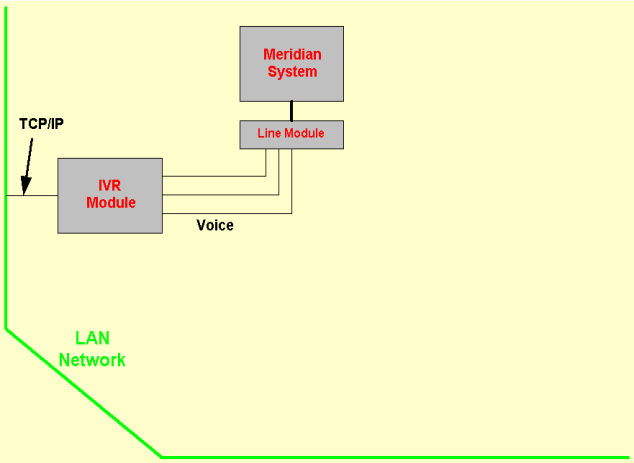
The IVR unit prompts the user for caller input and gathers the entered data. This process is configured and controlled by a call flow running under the Generations IVR call management software on the Nortel open IVR.

Call flows consist of individual cells in a flowchart, each of which handles a task such as answering a call, playing a voice prompt, and collecting data, and so on. This software also includes special user cells that allow user specific processing of caller data. In the Nortel environment, this type of cell is used as part of the call processing.

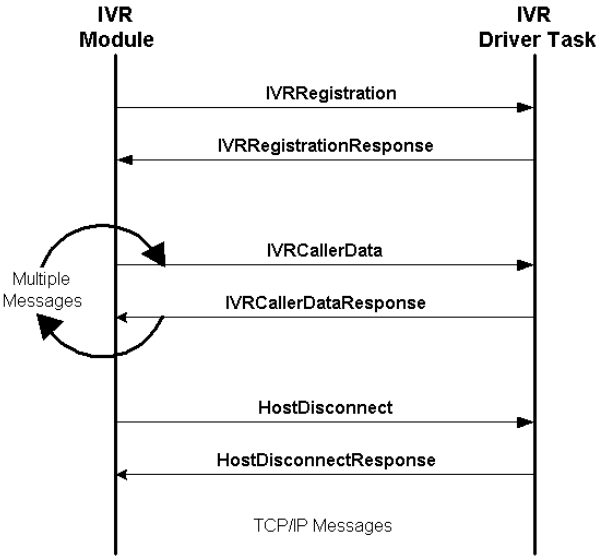
The user cell connects to the main IVR module task via message queues and routes call information from the call flow to the IVR module. This data is transferred to the IVR Driver Task running on a host on the Network.

IVR Driver Task and IVR Module Environment

The following scenarios describe TCP/IP connection based communications between the IVR Module and the IVR Driver Task. IVR Module originated messages flowing to the IVR Driver Task are shown in the following event flow 1. The IVR registration takes place once until disconnect occurs between the IVR Module and the IVR Driver Task. At that point the IVR module must re-register. As long as the IVR Module is registered with the IVR Driver Task, IVR Caller Data messages may be sent from the IVR Module to the IVR Driver task repeatedly until a disconnect takes place. For a 3rd party IVR, if any of the ports specified in the registration message can not be monitored, then an unsolicited status message is sent to the IVR to indicate that the port registration request failed.

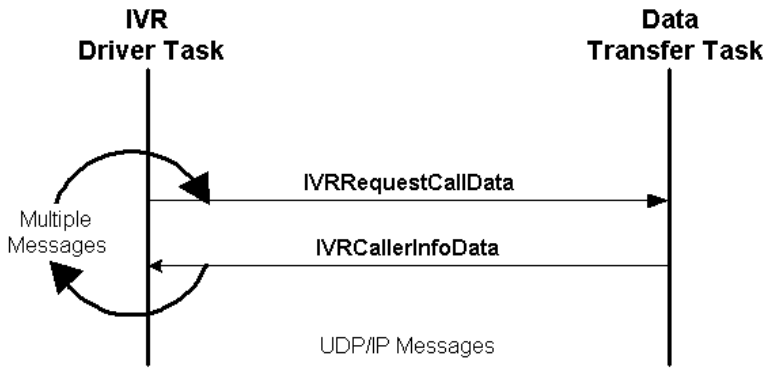


Event flow 2 shows a normal message flow consisting of the IVR module registering with the IVR Driver Task and sending IVR Caller Data messages, followed by a Host Disconnect message originating at the IVR Driver Task. The Host Disconnect message is the only message originating at the IVR Driver Task with a destination of the IVR Module (except for the unsolicited Status message).



IVR Driver Task to remote IVR Driver Task Communication.

The following scenario describes TCP/IP communications between IVR Driver Tasks . Event flow 3 shows a message flow consisting of the IVR Driver Task sending IVRRequestCallData messages to the remote IVR Driver Task. The remote IVR Driver Task responds with IVRCallerInfoData messages back to requesting IVR Driver Task.



Administering the IVR Module

1. Configure the IP Address and port used by IVR Driver Task for communication between IVR Module and IVR Driver Task on Symposium TAPI Service Provider.

2. Configure the Home Location Code (HLOC) of the M1 switch to which the IVR Module is attached.

3. Configure the maximum time value (in seconds) that the IVR module waits for a response from data sent to the IVR driver. After waiting the set number of seconds, the module times out and automatically transfers the call.

4. Specify whether or not the Network Call ID is available with the call information; if it is not available, configure a list of DNs (extensions of customer service agents) to be monitored.
   Note: All messages sent or received by the IVR Module are TCP/IP messages.

IVR Driver Task

The IVR Driver Task is an entity of the Symposium TAPI Service Provider. The IVR Driver Task provides call data support for inbound calls transferred from the IVR ports controlled by the IVR Module and monitored by the Symposium TAPI service provider. It also provides network call data support for calls overflowed from any remote Meridian1switch. Each IVR Driver Task may request call data from a remote IVR Driver Task for incoming calls from another networked Meridian1 switch. TCP/IP is used as a protocol to communicate between IVR Driver Task and IVR Module and IVR Driver Task to IVR Driver Task on the remote Symposium TAPI Server.

Call Data Support to IVR Module

The IVR Modules may register with a single IVR Driver Task on a server. IVR Modules may also exist at separate sites and associate with separate IVR Driver Tasks on separate servers. The functionality of the IVR Driver Task depends on whether the Network Call ID can be delivered with the Collected Digit Data in the Caller Data message from the IVR. If the Network Call ID can be delivered, then the Collected Digit Data is mapped using Network Call ID in IVR Driver Task Call Data Storage. However, if Network Call ID can not be sent from the IVR with the collected digit data, as is the case with 3rd Party IVR systems, then the Symposium TAPI Service Provider must monitor the IVR ports for calls coming into the IVR system. Once created or mapped, the call data remains with the IVR Driver Task until the life of call data span expires. Each inbound call in Symposium TAPI Service Provider requests the IVR Driver Task to look for call data for the Call ID. If the call data is found it is attached to the call for the lifetime of the call. Call data attached to an active call can be updated or modified by using lineSetCallData from the TAPI application.

Call Data Support to Network ACD Overflow (NACD)

When a call offered in Symposium TAPI Service provider is seen with Network Call ID, the IVR Driver Task is contacted to check if possible call data exists in the network of Symposium TAPI servers. The IVR Driver Task extracts the HLOC from the *Network Call ID* field. The HLOC is searched in the **IVR Host** table to find the IP address of the remote IVR Driver Task (on remote Symposium TAPI Server). If an entry is found in the table, it sends a TCP/IP message requesting call data for the Network Call ID to remote IVR Driver Task. The remote IVR Driver Task searches call data from Call Data storage using Network Call ID as the key. If found, an IVRCallerData message is sent back to the requesting IVR Driver Task.

Administering IVR Driver Task

- Configure the HLOC, IP Address and port numbers of all Symposium TAPI Service providers participating in network call data support. For example, If Symposium TAPI Server-A expects that the calls can network overflow or transfer from Symposium TAPI Server-B, then TAPI Server-A should configure its remote IVR_HOST table list with an entry of the HLOC and IP Address of TAPI Server-B.

- Configure the host IVR port to which the IVR module is attached.

Responsibilities of IVR Driver Task

- Monitor IVR DNs and record associated Network Call IDs.

- Receive IVRRegistration message. An indication of whether Call ID can be sent is included in the message. If Call ID cannot be sent, then the Port List is stored. The Source IP & Socket port of the IVR are also stored in case a HostDisconnect message needs to be sent to the IVR.

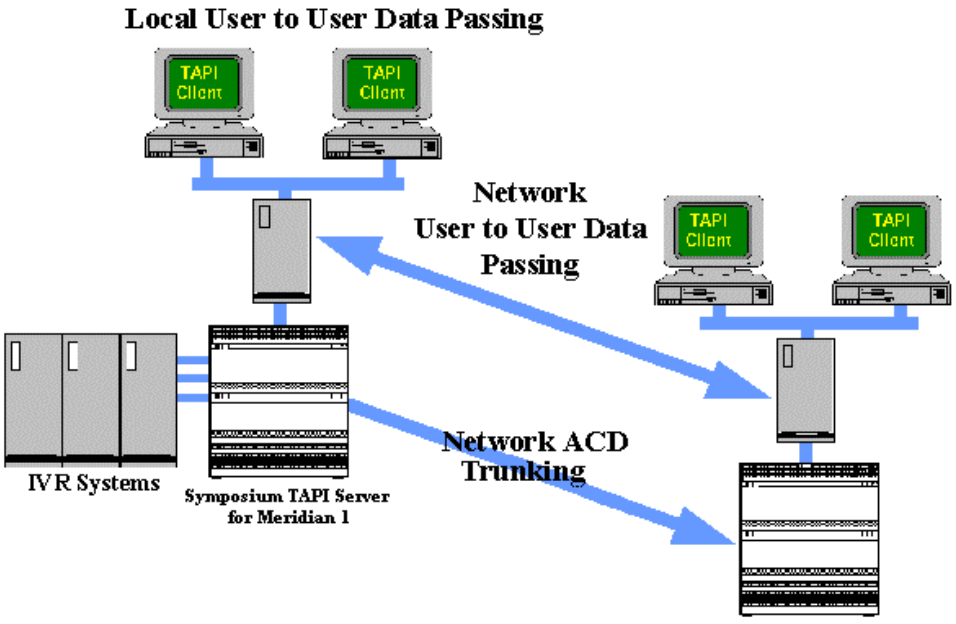
- Receive IVRDisconnect messages and remove items from port monitor list associated with the source IP & Socket port.

- Send the IVR Module a HostDisconnect message, close the socket, and perform the cleanup duties described in the IVRDisconnect case
- Receive IVRCallerData from the IVR Module. If received from an IVR and the Network Call ID is not included, then look up and include the associated Network Call ID.
- Return the IVRCallerInfoData message in response to IVRRequestCallData message via TCP/IP communication.

Networking Call Data

In the context of Microsoft's Telephony API (TAPI), networking is defined as the ability to associate and deliver user data with a call. User data can be an account code entered via the IVR system, a transaction account record number, agent-entered notes, or whatever is meaningful within the context of an individual call. This can facilitate the coordination of data available to agents when calls are transferred or conferenced locally.

In addition, Symposium TAPI Service Provider for Meridian1 allows the Networking Call Data functionality to consistently and reliably track call data related to calls that are NACD overflowed, transferred, or conferenced outside the switch to an another Meridian 1 switch.



The Meridian1 switch supports call routing between a network of Meridian 1 switches through ISDN trunk using Network Automatic Call Distribution (NACD). This functionality allows Symposium TAPI Service Provider for Meridian1 to consistently and reliably track CALLDATA related to calls that overflow from one Meridian 1 to another Meridian 1. The CALLDATA is obtained through the network over UDP/IP using the documented protocol illustrated in the *Symposium TAPI Service Provider's Programmer Manual*, which is available for download at the BAP (Business Affiliate Partner) Internet site.

Requirements of Networking Call Data

- In order for call data networking to function, all switches must be on an ISDN trunk and configured to pass network call ID. Refer to the "Configuring Data Networking" section in this chapter.

- The NACD package (package 207) must be installed on the Meridian 1 for NACD overflow to work. To verify, (1) go to Meridian 1 LD 22, (2) at the REQ prompt type PRT, and (3) at the TYPE prompt type PKG.

- Each switch must have a unique Home Location Code (HLOC). Refer to LD 15 customer data block prompt HLOC.

- All Symposium TAPI Servers must be running version 2.2 or higher of the software to communicate. All machines must be seen via TCP/IP and must have the ability to be "pinged" by the TCP/IP "ping" utility.

- The supplied license file for local and remote Symposium TAPI Servers must include the TAPI_IVR feature option. Refer to Chapter 4

- The remote IVR_HOST table must be configured properly to include entries of HLOC and IP Addresses of all participating Symposium TAPI Servers. Refer to the "Configuring Data Networking" section in this chapter.

Restriction for Network ACD Overflow and Call Data

Network CALLDATA works only if the call comes from another ACD Queue via another M1. The destination of the call on the receiving side must be ACD queue or CDN.

Performance of Network ACD Overflow and Call Data

From lab measurements, a call rate of 1.15 calls/second overflowing used 8 percent of the CPU on a Pentium PRO 200.

Multiple Symposium TAPI Service providers share the call data across the different domains.

Configure Data Networking

Configure ISDN/PRI Trunks

In order for call data networking to function, all participating Meridian 1 switches must be configured to support Network Call ID. Configure the network call trace feature to verify that Meridian1 passes Network Call ID between them.

These Reference documents provide help in setting up ISDN/PRI trunk:

- P0868068 Networking Features
- 553-290-100 ISDN/PRI Description
- 553-290-200 ISDN/PRI Installation
- 553-290-500 ISDN/PRI Maintenance
- P08688071 Automatic Call Distribution Reference guide
- P0868065 X11 Input / Output guide

The above documents can be found in the NORTEL Electronic Reference Library or Northern Telecom Practices (NTPs).

Configure TAPI Server to PING

All the participating Symposium TAPI Service providers must be configured for the TCP/IP protocol. To verify this, each participating TAPI Server must be able to ping the others. Ping is a diagnostic utility used to find out if a system is up and running and understands the TCP/IP protocol. The ping utility is distributed by Microsoft as part of the Windows NT OS.

Configure Symposium TAPI Service Provider

The remote HLOC, IP addresses and listening port of all participating Symposium TAPI servers must be configured.

The IVR Host HLOC, IP Address and port number should also be configured. These values should be sent to all other Symposium TAPI servers participating in network, so that they can update their remote host table.

Refer to: "*Configuring the Interactive Voice Response Table*" section of Chapter 3 "*Configuring Symposium TAPI Service Provider"*.

Configure IVR Module

This configuration is important to Call Data networking if you are using IVR unit to provide caller's data. Refer to:"*IVR Module"* section in this chapter for how to configure IVR Module.

Configure Call Data Life Span

The Call Data object lasts in memory for the amount of time configured as the Call Data Life Span value. After Call Data Life Span has elapsed, Call Data objects not referenced by any call fro the Call Data list are removed. The Call Data Life Span is configured using the M1S application. The span is specified using minutes. The valid range is 2 – 360 minutes; the default value is 10 minutes. For additional information refer to: *"Configuring the Provider Table"* section of Chapter 3: *"Configuring Symposium TAPI Service Provider."*

Configure Call Data Size

The size of the Call Data object is configured from the M1S application. The valid range for call data size is 10 – 8192 bytes; the default value is 512 or 0x200 bytes. For additional information refer to: *"Configuring the Provider Table"* section of Cghapter 3 *"Configuring Symposium TAPI Service Provider."*

Description of Different Call Data Networking Scenarios

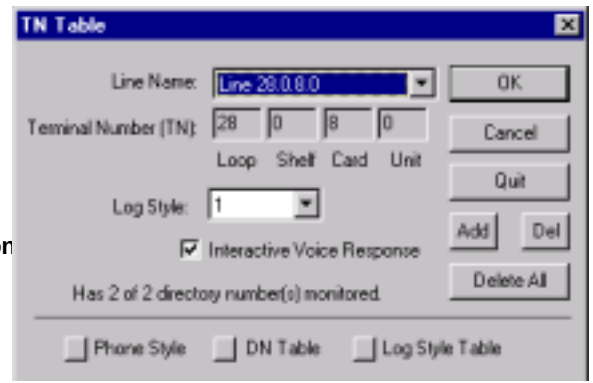
This section outlines various methods of networking call data between IVR and Symposium TAPI Service Providers.

Call Data Networking Between IVR and TAPI Service Provider

The following is an example of how call data is communicated from the Interactive Voice Response (IVR) unit to the Symposium TAPI Service Provider for Meridian 1.

1. The M1S Configuration (M1CFG.EXE) utility must be used to configure all IVR Ports (lines attached to the IVR unit). Simply check the Integrated Voice Response box. This allows the Symposium TAPI Service Provider to monitor all call activity on the IVR unit.

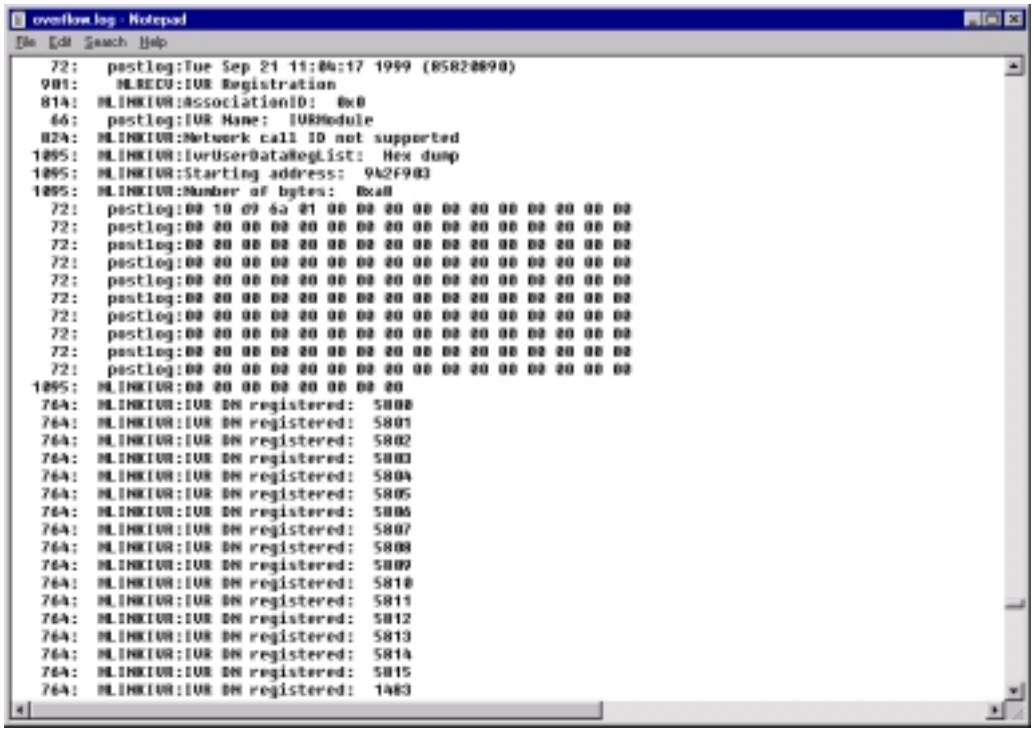
2. The IVR unit registers itself with the Symposium TAPI Service Provider. The IVR unit connects to a configured TCP port (by default 5000) and sends a registration message. This registration



message is part of the Nortel Networks proprietary protocol developed for IVR integration (see Figure below).

3. When a call is placed to a line attached to the IVR unit, the Symposium TAPI Service Provider detects the call because it is monitoring all lines on the IVR unit and saves the Call ID for that call.

4. The IVR unit plays prompts and collects data.



5. Using TCP/IP, the IVR unit passes the collected data to the Symposium TAPI Service Provider. This TCP/IP message is part of the Nortel Networks proprietary protocol developed for IVR integration.

6. The Symposium TAPI Service Provider creates a call data block that contains both the call data and the Call ID.

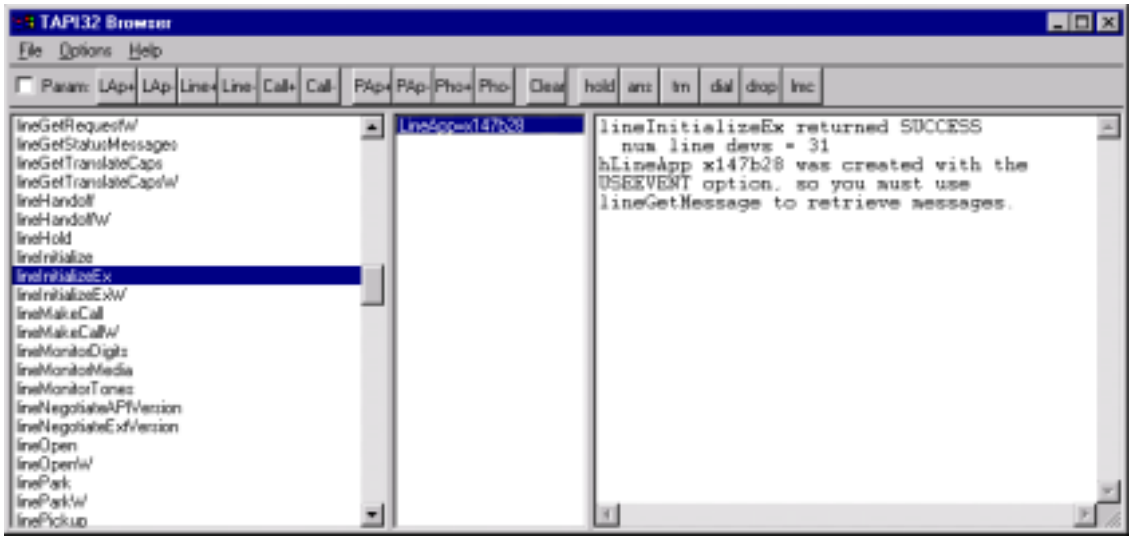
7. The IVR unit transfers the call from its port to a destination DN on the switch. Typically it transfers the call to an ACD queue. In turn, the ACD software presents the call to a call center agent.

8. The Symposium TAPI Service Provider informs all TAPI applications monitoring the agent's telephone of the new call. The TAPI applications retrieve the data by calling lineGetCallInfo. This data is commonly used for screen pop purposes

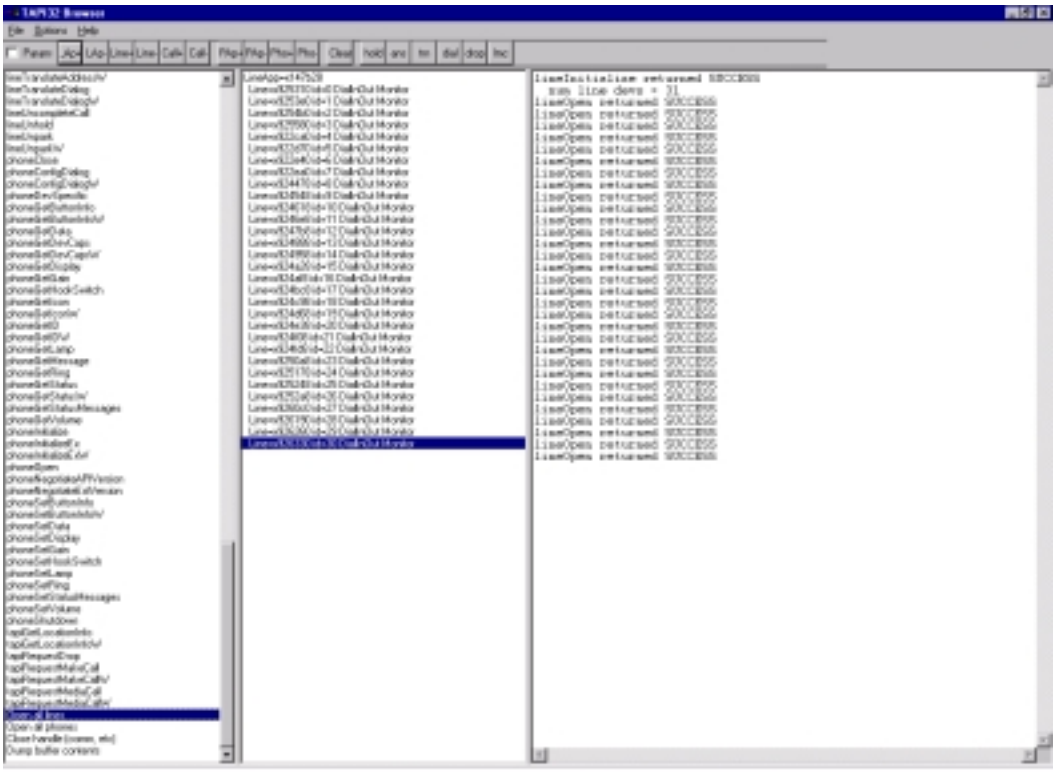
Verifying the Above Method Using TAPI32 Browser (Tb20w.exe) Application

This assumes that the IVR unit and database are properly configured before starting the Symposium TAPI Service Provider. Please verify that the IVR is configured properly and the script is running on the IVR unit. Please use the following steps and the TAPI32 browser application to verify that call data is being received.

1. Navigate to the TAPI32 browser application and double-click on it.
2. Select **lineInintializeEx** function from the left most split window of the TAPI32 browser application and double-click on it.

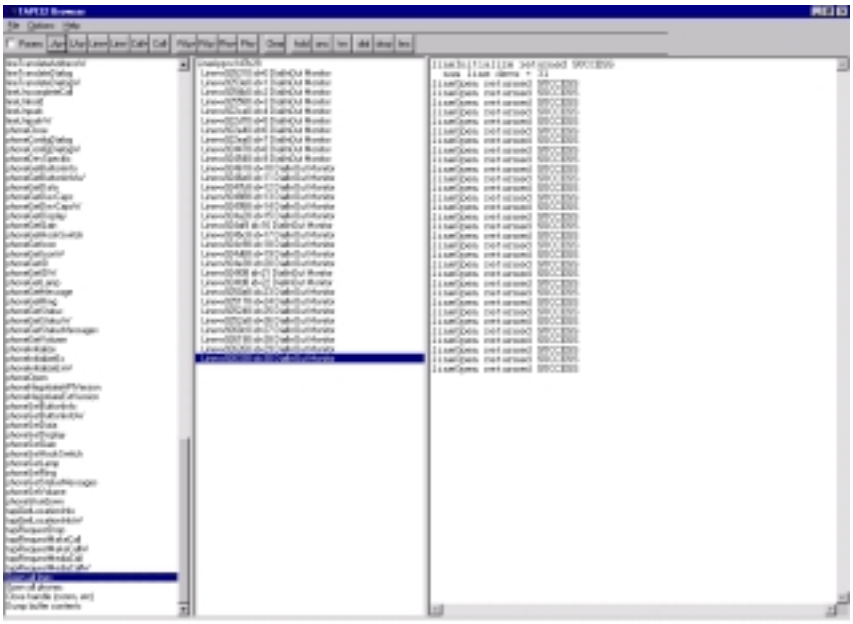


3. The right most split window of TAPI32 browser shows "lineInitializeEx returned SUCCESS, num line devs = n", where n is the number of TNs successfully registered with the Meridian1 switch.
4. Go to the left most function window of TAPI32 browser and scroll down to the "**Open all lines**" function and double-click on it.

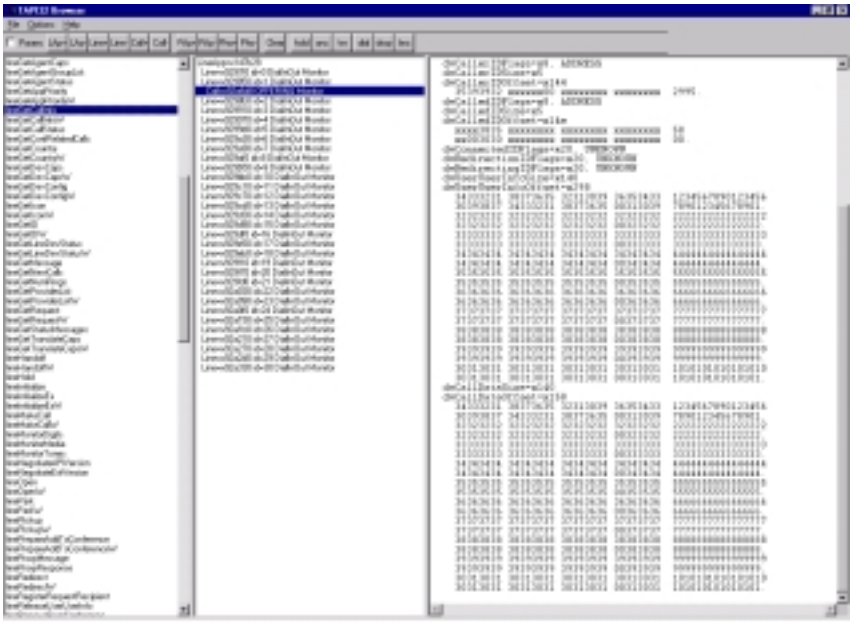


5. Depending upon how many TNs you have configured, the middle window shows several lines such as "Line=x63456 id=0 DialInOut Monitor.".
6. Use any non-monitored phone set (TN or DN) to make a call to the IVR port. Follow the voice prompts set by the script to enter call data.
7. At the same time, the TAPI browser displays a call appearing on one of the lines. This is the line monitoring the current called IVR port DN.
8. When the call data entry is complete, the IVR unit transfers the call to an ACD queue.
9. The call appears in TAPI browser as OFFERING to one of the lines in the ACD queue in which the agent is logged.
10. Select the OFFERING call from the middle window and scroll to the left window to locate l**ineGetCallInfo** function from TAPI browser application.

11. Select **lineGetCallInfo** function and double-click on it.



12. The right most window of TAPI browser application shows the result of values returned by TAPI Service Provider. The *dwUserUserInfo* and *dwCallData* fields of LINECALLINFO structure show the call data entered by the user.



Call Data Networking Between TAPI Service Providers with Network ACD Overflow

The following is an example of how call data is communicated from a local Symposium TAPI Service Provider for M1 to a remote Symposium TAPI Service Provider for M1.

Imagine a network consisting of two Meridian 1 PBXs connected via ISDN/PRI trunks: M1-A and M1-B. The IVR unit is attached to M1-A. Both Meridian 1 PBXs are using Symposium TAPI Service Provider for Meridian 1 version 2.2 or higher. Also, the ACD queue to which the IVR unit transfers the call to immediately overflows to M1-B.

The steps for Symposium TAPI Service Provider for M1-A are:

1. A call arrives on a line attached to the IVR unit and monitored from the TAPI server. Since M1-A is part of a network of Meridian 1 PBXs, the Call ID contains an identifier that uniquely identifies it as a Call ID on M1-A. This unique identifier is referred to as a Home Location Code (HLOC). The IVR unit plays prompts and collects data.

2. Using TCP/IP, the IVR unit sends collected data along with information about the port or DN on which the data was collected to the Symposium TAPI Service Provider for M1-A.

3. The Symposium TAPI Service Provider for Meridian 1-A updates its call data object and stores them in an index-based STL data structure.

4. The IVR unit transfers the call from its port to a destination DN on the switch. Typically, it transfers the call to an ACD queue.

Note: The list of all participating TAPI service providers is read from the database during initialization of Symposium TAPI Service Provider for Meridian1.

The call has now left M1-A and is delivered to an ACD queue on M1-B. The steps for Symposium TAPI Service Provider for M1-B are:

1. The M1-B TAPI server receives call offered from Meridian 1 switch. The message, in addition to all mandatory information elements, also contains NetworkCallID. The M1-B TAPI server interprets the message as if the call originated from the remote Meridian 1 and transferred it to Meridian 1-B switch.

2. The M1-B TAPI server extracts the HLOC from the NetworkCallID field. The **IVR Host** Table is searched for the HLOC. If an entry is found in the **IVR Host** Table, The M1-B sends a IVRRequestCallData TCP/IP message to the remote M1-A TAPI server requesting call data against NetworkCallID. This table contains the HLOC and corresponding IP address of all participating Symposium TAPI servers in the network. The **IVR Host** Table is configured during the Initialization time. In this case, a message is sent to the M1-A TAPI server.

3. The M1-A Symposium TAPI server receives the message and, after searching its call data list, finds the call data for the call appearing on the M1-B TAPI server. M1-A TAPI server sends a IVRCallerInfo data message back to the M1-B TAPI server

4. The M1-B TAPI server receives IVRCallerInfo data message with call data. On receiving the call data, it replaces the Call ID field with the M1-B current local call ID.

5. M1-B Symposium TAPI server passes the data to any TAPI applications monitoring the agent's telephone via a LINECALLINFO message and the subsequent **lineGetCallInfo** function call.

Verifying this method using TAPI Browser (Tb20w.exe) application

This assumes that the IVR unit and MLINKSP.INI file are properly configured before starting Symposium TAPI Service Provider. Please verify that the IVR is configured properly and the script is running on the IVR unit. Also verify that Network ACD overflow time is set in the switch for ACD queue on M1-A to overflow the call to ACD queue on M1-B.

Please use the following steps on the Symposium TAPI Server for M1-A to verify the passing of network call data using the TAPI32 browser application:

1. Run TAPI32 browser (Tb20w.exe) application.
2. Select **lineInitializeEx** function from the left most split window of the TAPI32 browser application and double-click on it.
3. The right most split window of TAPI32 browser shows "lineInitializeEx returned SUCCESS, num line devs = n", where n is the number of TNs successfully registered with the Meridian1 switch.
4. Go to the left-most function window of TAPI32 browser and scroll down to "**Open all lines**" function and double-click on it
5. Depending upon how many TNs you have configured, the middle window shows several lines such as "Line=x63456 id=0 DialInOut Monitor.".
6. Use any non-monitored phone set (TN or DN) to make a call to the IVR port. Follow the voice prompts set by the script to enter call data.
7. At the same time, the TAPI browser displays a call appearing on one of the lines. This is the line monitoring the current called IVR port DN.
8. When the call data entry is complete, the IVR unit transfers the call to the ACD queue of M1-A.
9. The NACD Overflow option set on M1-A switch causes the call to be overflowed to the ACD queue on M1-B switch.

Please use the following steps on the Symposium TAPI Server for M1-B to verify the passing of network call data using the TAPI32 browser application:

1. Follow steps 1-6 from the above M1-A server. These steps must be done before the call is made to IVR port in M1-A switch.
2. The call appears in TAPI browser as OFFERING to one of the lines in the ACD queue in which the agent is logged.
3. Select the OFFERING call from the middle window and scroll to the left window to locate l**ineGetCallInfo** function from TAPI browser application.
4. Select **lineGetCallInfo** function and double-click on it.
5. The right-most window of TAPI browser application shows the result of values returned by TAPI Service Provider. The *dwUserUserInfo* and *dwCallData* fields of LINECALLINFO structure show the call data entered by the user.

Call Data Networking Between TAPI Service Providers Without Network ACD Overflow

The following is an example of how call data is communicated from a local Symposium TAPI Service Provider for M1 to a remote Symposium TAPI Service Provider for M1 without the IVR unit and Network ACD overflow switch setting. This example uses **lineSetCallData** to establish call data on an active call and then transfers or conferences to an ACD queue on the remote Meridian 1 switch.

Imagine a network consisting of two Meridian 1 PBXs: M1-A and M1-B connected via ISDN/PRI trunks. Both Meridian 1 PBXs are using the Symposium TAPI Service Provider for Meridian 1 version 2.1 or lower.

The steps for the Symposium TAPI Service Provider for M1-A are:

1. A call arrives on the ACD queue., ACD software on M1-A presents the call to a call center agent.
2. Select the active call and use lineSetCallData to set call data. The Symposium TAPI Service Provider informs all TAPI applications monitoring the agent's telephone of the new call data available. The TAPI applications retrieve the data by calling **lineGetCallInfo**. This data is commonly used for screen pop purposes.
3. The Symposium TAPI Service Provider for Meridian 1-A updates its call data object list.
4. Transfer or Conference the active call to an ACD queue on remote M1-B switch.

Note: The list of all participating TAPI service providers is read from mlinksp.ini file during initialization of Symposium TAPI Service Provider for Meridian1.

The steps for Symposium TAPI Service Provider for M1-B are:

1. The M1-B TAPI server receives call offered from Meridian 1 switch. The message, in addition to all mandatory information elements, also contains NetworkCallID. The M1-B TAPI server interprets the message as if the call originated from the remote Meridian 1 and transferred it to Meridian 1-B switch.

2. The M1-B TAPI server extracts the HLOC from the NetworkCallID field. The **IVR Host** Table is searched for the HLOC. If an entry is found in the **IVR Host** Table, The M1-B sends a IVRRequestCallData TCP/IP message to the remote M1-A TAPI server requesting call data against NetworkCallID. This table contains the HLOC and corresponding IP address of all participating Symposium TAPI servers in the network. The **IVR Host** Table is configured during the Initialization time. In this case, a message is sent to the M1-A TAPI server.

3. The M1-A Symposium TAPI server receives the message and, after searching its call data list, finds the call data for the call appearing on the M1-B TAPI server. M1-A TAPI server sends a IVRCallerInfo data message back to the M1-B TAPI server

4. The M1-B TAPI server receives IVRCallerInfo data message with call data. On receiving the call data, it replaces the Call ID field with the M1-B current local call ID.

Verifying this method using TAPI Browser (Tb20w.exe) application

The following tasks are provided for users who require additional methods to ensure the Symposium TAPI Service Provider is properly installed and working.

TAPI Server A is connected to switch A, TAPI Server B is connected to switch B.

On Server A:

1. Run the **TB20w.exe** program and load the Service Provider. Refer to the "Using the Browser Tool" section.
2. Check the **Params** box.
3. Open all lines.
   a. Double-click on the **Open All Lines** command (use the left scroll bar to view this command).

On Server B:

1. Run the **TB20w.exe** program and load the Service Provider. Refer to the "Using the Browser Tool" section.
2. Check the **Params** box.
3. Open all lines.
   a. Double-click on the **Open All Lines** command (use the left scroll bar to view this command).

To answer an incoming call on Server A:

1. From another phone set, call the DN of a monitored set.
2. Position on the *Offering call* in the Browser window.
3. Double-click on the **lineAnswe**r command.
4. Click **OK**.

To do a blind transfer with Call Data on Server A

1. Position on the *connected line* and double-click on **lineSetupTransfer** command
2. Click **OK**
3. Double-click on **lineSetCallData** command

Note: If your version of TAPI Browser does not support setting Call Data then set the --- size to less than 512 or 0x200 bytes and click OK.

4. Click **OK**.
5. Position on Dialtone line and double-click Line Dial
6. Click **IpszDestAddress** and enter a valid Dn on switch B to transfer to.
7. Click **OK.**

To answer an Incoming call on Server B

1. Position on the *Offering call* in the Browser window.
2. Double-click on the **lineAnswe**r command.

To Do a lineGetCallInfo on Server B

1. Double-click on lineGetCallInfo command. The right-most window of TAPI browser application shows the result of values returned by TAPI Service Provider. The *dwUserUserInfo* and *dwCallData* fields of LINECALLINFO structure show the call data entered by the user.

Troubleshooting

While troubleshooting keep the Logger application running. Clear the log file before any major operation or whenever you do not want current logs appended to previously stored log information.

To permanently store the important log information you must rename or save Overflow.log file to a different location.

This troubleshooting section assumes that the user is comfortable using debug tools such as Logger and TAPI32 Browser application. It is also assumed that the user understands basic operations, such as how to start and stop Symposium TAPI Service provider.

For help on how to run, save, and clear the log file using Logger application, refer section Logger Troubleshooting tool in Chapter 7.

There is no IVR Registration Message in the overflow.log file capture after initialization of TAPI Server.

1. Verify that the Symposium TAPI server machine and IVR unit are able to "ping" each other using the Ping utility. If not, stop and consult your Network Administrator in running this utility. Otherwise, continue to step 2.
2. Shutdown Symposium TAPI Service Provider.
3. Open the DOS Command prompt window on TAPI Server Machine and type "netstat –a >a.txt" and press<**Enter>**. Open a.txt file in notepad.exe application.
4. If port 5000 is listed as either 'LISTENING' or 'ESTABLISHED' it means there is a port conflict; the port is already in use by any other application. Consult your network administrator to resolve this. If not listed, follow step 4.
5. Clear the Overflow.log using Logger application and then start Symposium TAPI Service Provider. Redo step 3.
6. If port 5000 is listed as 'LISTENING and does not have an entry as 'ESTABLISHED' state, go to step 7. OR, if port 5000 is listed as 'LISTENING' and also has entry as 'ESTABLISHED', go to step 8. OR, if port 5000 is not listed as 'LISTENING', go to step 8.
7. Verify that the IVR unit module is configured for port 5000. To verify this in Nortel's Open IVR system, either do the following or use a third party IVR guide to check similar information:
   - Open the shell window by right clicking the mouse in the IVR unit UNIX system and selecting V shell.
   - Change the path to reflect where the IVRmodule.cfg is located. (for example, cd/u/nortel/usr/TAPI0616/IVRM).
   - Open the IVRmodule.cfg using vi editor.

- Verify that the portnumber entry is set to 5000 and externhost is set to the IP address of the TAPI Server Machine. If any of these values need modification you must stop, reconfigure the IVRmodule.cfg file, and then restart the IvrModule.

8. This should never happen, so save the overflow.log file from the Logger application by appending any of the residual left in Logger window, and contact NORTEL Networks product support .

There is an IVR Registration Message in the overflow.log file during initialization of TAPI Server, but no Call Data message is received by TAPI server when the call is transferred from IVR port to an ACD queue.

The above behavior may be seen if an improper or forced shutdown of TAPI services (Tapisrv.exe) or Symposium TAPI Service Provider has occurred. Do the following to resolve the situation

1. Shutdown Symposium TAPI Service Provider. (Verify this from Logger window. Stopping ACDProxy does not stop TAPI services in all circumstances).
2. Go to the IVR unit machine and stop Nortel's IVR Module process. If a third party IVR is being used, stop its equivalent to the IvrModule process.
3. Verify that the IVR unit module is configured to monitor the DNs that are used by IVR ports:
   - Open shell window by right-clicking the mouse in IVR unit UNIX system and selecting V shell.
   - Change the path to where the IVRmodule.cfg is located. (e.g.,cd /u/nortel/usr/TAPI0616/IVRM).
   - Open IVRmodule.cfg using vi editor.
   - Verify that there should monitordn (e.g., monitordn 5800) entry for each of the IVR ports configured with IVR unit to play voice prompt. If any of these values need modification then you must stop, reconfigure the IVRmodule.cfg file, and then restart IvrModule.
4. Clear the Overflow.log file using Logger application and then start Symposium TAPI Service Provider. Verify in the Logger window that services have successfully started.
5. Go to the IVR unit and start the IVR module.
6. Wait for the IVR Registration message to appear in the Logger window. Test this by calling IVR port DN and follow the voice prompts to enter call data.
7. When the IVR unit transfers a call from the IVR port to an ACD queue, a call appears on an agent line logged in to that queue. Verify this using any TAPI application by calling **lineGetCallInfo** to check call data. If no call data is verified, save the logs and contact Nortel Networks Product support.

There is Caller's Call Data in overflow.log file, but no Call Data is seen using lineGetCallInfo on call offered on agent's line.

This assumes that the call data appears in the Overflow.log file or Logger window of Logger application, but call data does not appear with a screen pop-up on an agent desk.

1. Verify that you are monitoring all IVR ports in Symposium TAPI Server that may be used by IVR unit to transfer calls on ACD queue. You may also examine the IVR Caller Data message in Overflow.log file to check which IVR port DN is being called. Verify this is included in Symposium TAPI Server database for monitoring purpose.

2. If the above step does not help, then save the Log files and contact Nortel Networks product support.

There is call data between the transferred or conferenced call inside the switch. No call data is seen when transferred or conferenced to another Meridian 1 switch.

1. Verify, all Meridian 1 switches participating in network must be connected using ISDN/PRI trunking and also must be configured to pass Network Call ID. Configure the network call trace feature to verify that Meridian1 passes Network Call ID between them. If this is not TRUE then stop and consult switch administrator.
2. Verify that remote IVR_HOST table contains an entry for current remote Symposium TAPI server IP address and HLOC.

There is call data when a call is transferred from the IVR port to an ACD queue on the same switch. When Network ACD overflowed to another Meridian 1 via network ACD overflow, call data does not appear when call is offered on Call Center agent's line.

3. Verify that Network ACD overflow is set properly. Use LD 23 to examine that a proper Network ACD queue is configured. For example,

```
LD 23
ACD000
MEM AVAIL: (U/P): 1941668    USED: 679771    TOT: 2621439
DISK SPACE NEEDED: 181 KBYTES
2MB BACKUP DISKETTE(S) NEEDED: 1  (PROJECTED)
ACD DNS  AVAIL: 23860    USED:   140    TOT: 24000
REQ  PRT
TYPE NACD
CUST 0
ACDN 7194
TABL D


ACD DN # :  7194
TABLE NAME: D
ENTRY NO    TARGET ID       TIMER VALUE   STATUS    REGISTERED

   1         3258                   4     ACTIVE    OK

MEM AVAIL: (U/P): 1941668    USED: 679771    TOT: 2621439
DISK SPACE NEEDED: 181 KBYTES
2MB BACKUP DISKETTE(S) NEEDED: 1  (PROJECTED)
ACD DNS  AVAIL: 23860    USED:   140    TOT: 24000
REQ
```

Chapter 6: Microsoft TAPI 2.1 and TCMAPP

The information in this chapter is for informational purposes only. These are not procedures, but supplements to the Microsoft TAPI Readme.txt file that is provided by Microsoft. Be sure to read the Microsoft TAPI Readme.txt file and install according to those instructions.

Microsoft TAPI 2.1 Overview

The Microsoft Telephony Applications Programming Interface (TAPI) Release 1.4 (first party call control), currently included with Windows 95, allows application programs to control telephony functions such as establishing, answering and terminating calls, as well as holding, transferring, and conferencing. Microsoft's latest TAPI version included with Windows NT4.0 Server, Workstation 4.0, and Windows 98, introduces sophisticated server-based third party call control functions for monitoring station set status, supporting predictive dialing applications, ACD (Automatic Call Distribution) queue events, call routing, and network security. It fully addresses client-server needs for call monitoring and control with built-in TAPI remote service provider from Microsoft.

Microsoft's newest version of TAPI contains the following features:

- Full 32-bit architecture with backward compatibility for 16-bit TAPI applications
- Call Center support
- Allows Windows NT to be a telephony client or server
- Allows Windows 95 to be a telephony client
- Optional Client-Server support that is LAN independent. For example, TCP / IP, SPX / IPX, NetBEUI, and others.

Upgrading Microsoft TAPI 2.1

On Windows NT4.0 server and client machines (NT 4.0), Microsoft TAPI must be upgraded from TAPI 2.0 to TAPI 2.1. Client machines running Windows 95 must upgrade from Microsoft TAPI 1.4 to TAPI 2.1. This upgrade allows the client and the server to communicate. Microsoft TAPI 2.1 is available via Microsoft's Web page

Note: Upgrading to Microsoft TAPI 2.1 is not necessary for the Windows NT Server and Windows NT clients if you have Microsoft Service Pack 4 or higher installed. Although a minimum of Service Pack 4 eliminates the need to upgrade Microsoft TAPI to 2.1, you must still set up the TCM application on the server and the client as described in the following sections. A minimum of Service Pack 4 is required for the ACD Proxy Service to work.

Setting up the TCM Application

The Server and Client machines running Windows 4.0 must have a minimum of Service Pack 4 installed before setting up the TCM application. Refer to the Microsoft TAPI Readme.txt file for information on upgrading to Microsoft TAPI 2.1. Also, refer to the "Upgrading Microsoft TAPI 2.1" section in this chapter for additional Nortel information.

The following steps are an overview of setting up the TCM application. Detailed information is presented in the following sections.

1. Set up the server:
    - As a primary Domain controller, Or
    - As a standalone server in a Domain
2. Configure the TCMsetup on the server
    - Run the TCM application to assign the lines to be used by the clients, Or
    - Delete a line from a user
3. Set up the client:
    - The NT4.0 client machines have at least Service Pack 4 installed. Windows 95 and 98 client machines must be upgraded to Microsoft TAPI 2.1. Run the TCMsetup.exe for the client
    - Restart the client machine
4. Restart the server

Step 1: Setting up the Server

The server may be configured as a primary Domain controller or as a standalone server in a Domain. After configuring the Server as a primary Domain controller or as a standalone server in a Domain, run the TCMsetup. Use TCMAPP to assign the client's lines. The following sections contain detailed information for each of these tasks.

Setting up the Server as a Primary Domain Controller

Ensure the Windows NT server has either the Microsoft TAPI 2.1 upgrade or a minimum of Service Pack 4. Refer to the Microsoft TAPI Readme.txt file for information on upgrading to Microsoft TAPI 2.1. Also, refer to the "Upgrading Microsoft TAPI 2.1" section in this chapter for additional Nortel information.

The ACDPROXY Service login and password must be set up to the same Login and password used by the Telephony Service.

The User login and password are set in the User Manager. If there is a problem with any of the services, contact the Administrator of the server.

Setting Up the Server as a Primary Domain Controller

1. Add all users to the server.

   - Click **Start** and select **Programs**, then select **Administrative Tools, User Manager.**

2. Add a Telephony user to the server with Administrators capabilities.

   - Click on the **Start** button, select **Programs**, and then select **Administrative Tools**, **User Manager**.

   - Setup an additional user account on the Primary Domain Controller with Administrators capabilities. An example is shown below with the User name of TAPI_ADMIN. This user account will only be used with Telephony Services Startup, TCMSetup and optional ACDProxy Startup on this Server. It is not recommend that the Administrator account be used for this purpose.

3. Add the client machines to the Server Manager.

4. Click the **Start** button, select **Programs**, select **Administrative Tools, Server Manager.**

5. Click **Computer** and select **Add to Domain**.

Note: The clients you are adding to this server can not be logged in to two domains at one time

6. Add the Client computer name, as it appears on the Client.

7. Select WINNT Workstation or server and click **ADD**.

8. Repeat steps C and D for each client being added to the server.

9. Proceed with configuring the TCMsetup. Refer to the "Configuring the TCMsetup" section.

Setting up the Server as a Standalone Server in a Domain

Note: You should always log into your local machine as Administrator. You should never log in to the Domain at your standalone server.

1. Ask your Network Administrator to add the standalone server to the domain.

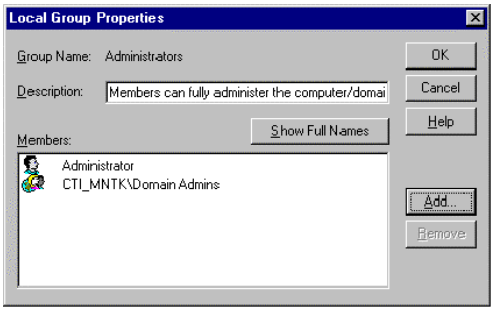
2. Request a user account on the Domain from your Network Administrator for your telephony service to start (TCMSETUP) on your local machine.

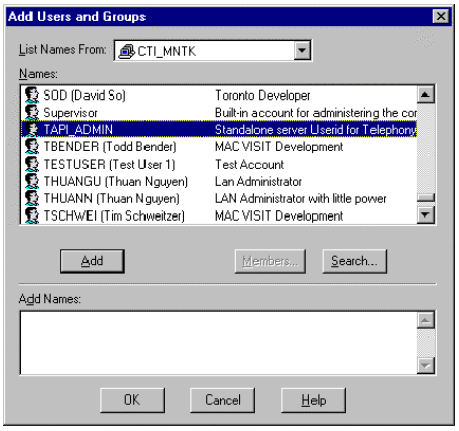
3. Have your Network Administrator verify that all TAPI users are already domain users or add any that are not present.

4. Complete the following steps to allow for setting up your TCM-SETUP command:

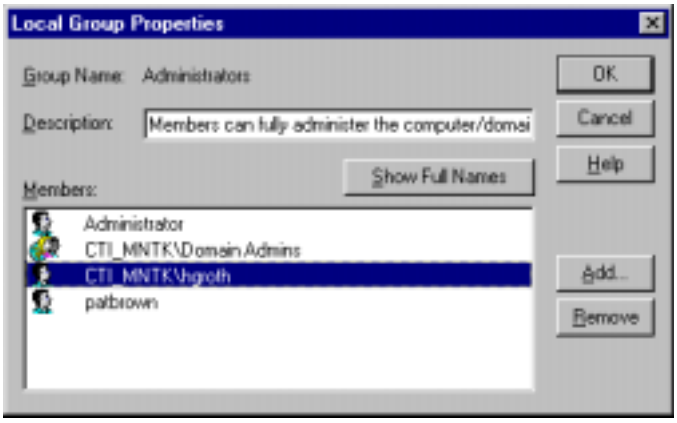
   - Access the User Manager on your local machine, and double-click **Administrators** at the bottom of the screen. The *Local Group Properties* dialog box opens.

- Position on your domain user account (CTI_MNTK\DomainAdmins) and click **Add**. The Add Users and Groups screen opens.





- Find and highlight the user account given to you by the Network Administrator for your telephony service. Click **Add** to add the user. Your user account now displays on the Local Group Properties screen.



5. Proceed with configuring the TCMsetup. Refer to the "Configuring the TCMsetup" section.

Step 2: Configuring the TCMsetup on the Server

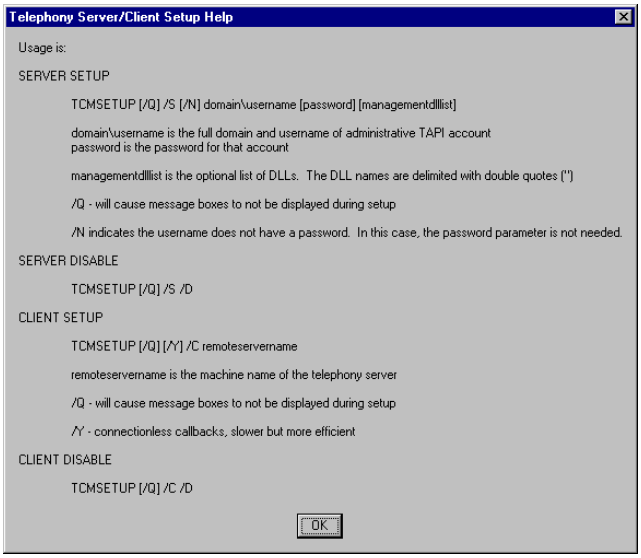
These are the steps to configure the TCMsetup on the server. The following sections provide detailed information.

1. Launching the TCMsetup
2. Assigning the lines to be used by the client
3. Deleting a line from a user - if necessary

Note: If you setup the server as a standalone on a Domain, you should always log into your local machine as Administrator. You should never log in to the Domain at your standalone server.

Launching the TCMSetup

Note: Definitions: /s = Server, domain = the domain of the TAPI server, userid = the user setup with admin rights for use with the Telephony Service, password = the password used by that user

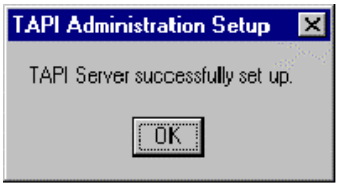

Telephony Server/Client Setup Help
Usage is:
SERVER SETUP
TCMSETUP [/Q] /S [/N] domain\username [password] [managementdlllist]
domain\username is the full domain and username of administrative TAPI account
password is the password for that account
managementdlllist is the optional list of DLLs. The DLL names are delimited with double quotes (")
/Q - will cause message boxes to not be displayed during setup
/N indicates the username does not have a password. In this case, the password parameter is not needed.
SERVER DISABLE
TCMSETUP [/Q] /S /D
CLIENT SETUP
TCMSETUP [/Q] [/Y] /C remoteservername
remoteservername is the machine name of the telephony server
/Q - will cause message boxes to not be displayed during setup
/Y - connectionless callbacks, slower but more efficient
CLIENT DISABLE
TCMSETUP [/Q] /C /D
OK

1. Enter the following using either the **Run** box from the **Start** button or from a command prompt:

tcmsetup.exe /s domain \userid password (for example, tcmsetup.exe / s Iowa\tapi_admin admin), or, if a password is not used:

tcmsetup.exe /s /n Iowa\tapi_admin

2. When TCMsetup is complete this confirmation box appears.



Assigning the Lines Used by the Clients

1. Run the TCMAPP.exe, located in the c:\Winnt\system32 directory The TAPI Administration Application window opens.

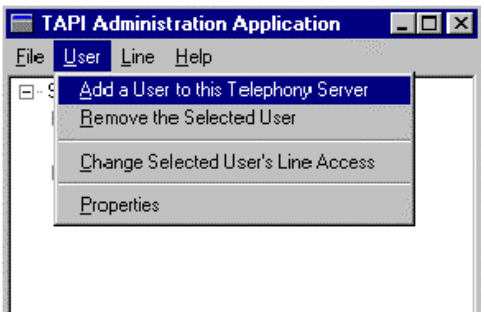
Note: The first time TCMAPP.exe is run, User>Add a user …> **must be selected before any of the following screens can be viewed.**

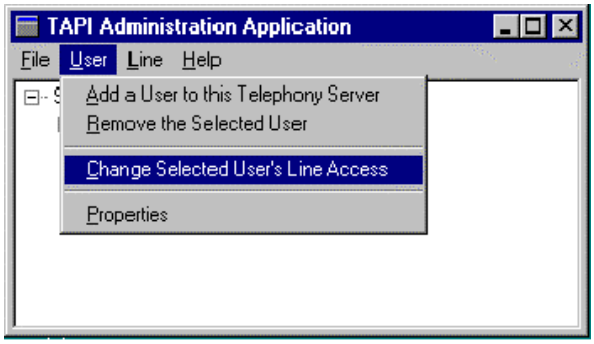
2. Click **User** located on the menu bar and select the **Add a User to this Telephony Server** option from the Popup. The *Add Users and Groups* dialog box opens.

3. Add the Users and the lines for each client.

4. Click the user and select the **Change Selected User's Line Access**. The *Change Line Device Access for Selected User* dialog box appears.

5. Click the line you wish to add to the client to highlight it and click the OK button.
6. The line you selected is displayed under the Client's name in the window.


TAPI Administration Application
File User Line Help
Add a User to this Telephony Server
Remove the Selected User
Change Selected User's Line Access
Properties


TAPI Administration Application
File User Line Help
Add a User to this Telephony Server
Remove the Selected User
Change Selected User's Line Access
Properties

7. Repeat steps 1 and 2 until all users have been added and lines assigned to all users.

8. Exit the Application. Be sure to click Yes to save the information.

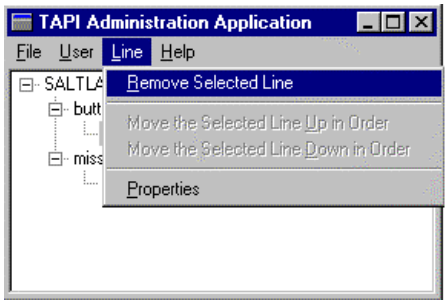
Deleting a Line from a User

1. Run the TCMAPP.exe, located in the c:\Winnt\system32 directory. Select the User. Select the Line.

2. Click **Line** located on the Menu bar.

3. Click the **Remove Selected Line** option.

4. The line is removed.

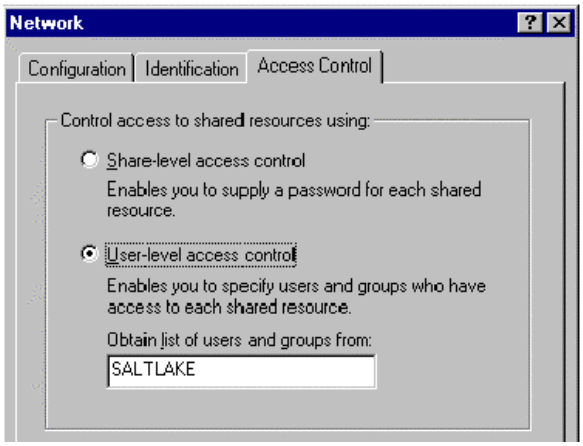

TAPI Administration Application
File User Line Help
Remove Selected Line
Move the Selected Line Up in Order
Move the Selected Line Down in Order
Properties

Step 3: Setting Up the Client

Ensure the client machines have been upgraded to TAPI 2.1 and, if you have Windows NT client machines, a minimum of Service Pack 4 has been added to them.

Note: Client machines can only be logged in to one domain at any one time. Remove the machines from any prior domains before proceeding with setting up the client.

On Windows 95 an 98 client machines, ensure that File Sharing is selected. Selecting print sharing is optional.


Network
Configuration
Identification
Access Control
Control access to shared resources using:
Share-level access control
Enables you to supply a password for each shared resource.
User-level access control
Enables you to specify users and groups who have access to each shared resource.
Obtain list of users and groups from:
SALTLAKE

1. From the Access control tab page, select the User-level access control. In the Network setup you must make sure the

User Level Access is set to the Domain Name. Please refer to the TAPI 2.1 Readme.txt file for any further information. Insert Network Screen Print

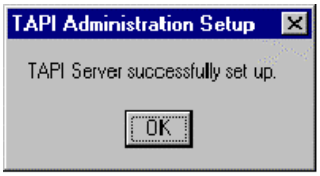
2. Click **OK**. The *File and Print Sharing* dialog box is displayed. Select both the File and Print Sharing options and click **OK**.

File and Print Sharing
I want to be able to give others access to my files.
I want to be able to allow others to print to my printer(s).
OK
Cancel

To Set Up the Client

1. Click **Start/Run** and enter the following information: • tcmsetup.exe /c servername (for example, tcmsetup.exe /c Desmoines)

Be sure to use the server name and not the domain name. The following message opens:



2. Reboot the server after you have finished setting up the Server and the Client.

Using Symposium TAPI Service Provider with Novell Clients

In order for the remote service provider to work, Novell network users must (1) log in to the Netware network, and (2) log in to the Windows NT domain where the TAPI device provider is located. If logging into the Novell network must occur first, Novell's Netware client software should be used instead of Microsoft's Client for Netware Networks client software.

Additional NT 4.0 Client Information

If the **Enable Security** check box (on the Advanced IP Addressing panel) is selected, you may experience problems on the TAPI Server client machine running the Microsoft TAPI 2.1. Ensure this option is not selected.

To View the **Enable Security** Check Box:

1. Right click the Network Neighborhood icon and select the Properties option. The Network panel opens.

2. Select the Protocols tab.

3. Select TCP/IP Protocol and click the Properties button.

4. On the Microsoft TCP/IP Properties panel, click the Advanced button. The Advanced IP Addressing panel opens.

5. The **Enable Security** check box must not be selected.

Reinstalling the Older Version of Microsoft TAPI

If you wish to uninstall TAPI 2.1 and return to Microsoft's TAPI 1.4 on a Windows 95 client only, follow these steps:

1. Locate the remtapi.inf file.

2. Right click the correct file and select the Install option. If you wish to uninstall TAPI 2.1 and return to Microsoft's TAPI 2.0 on Window NT only, follow these steps:

   - Locate the remtapin.inf file.

   - Right click the correct file and select the Install option.

Note: If you use the remtapi files, you may have to copy the Telephony.cpl file back into the Windows\system directory.

Chapter7: Additional Tools

Information on other applications that work with the Symposium TAPI Service Provider. These tools include the ACDProxy Service, Interactive Voice Response (IVR) units, Microsoft Outlook 97, and pcAnywhere.

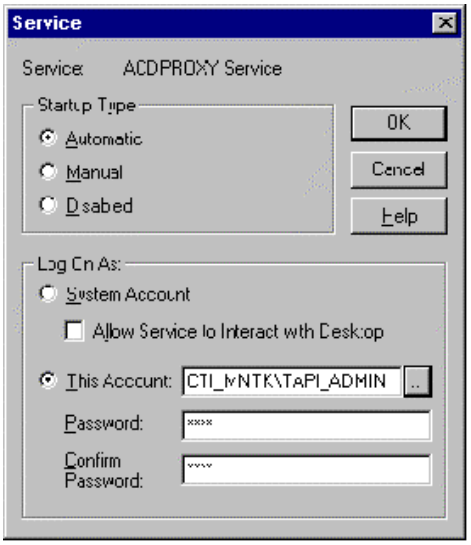
ACDProxy Service

ACDProxy Service is a separate application from Nortel. This application allows the agents to log in, log out, and go ready or not ready. The setup procedures for the ACDProxy Service are provided in the following sections

Note: Microsoft Service Pack 4 is required for the ACD Proxy Service to work. Ensure the TCM Setup is installed before configuring the ACDProxy Service.

The ACDProxy Service log in and password must be set up to the same Login and password used by the Telephony Service. The User login and password are set in the User Manager before attempting services startup. Refer to the "Setting up the Server" section located in Chapter 4 for information on setting up the user with domain user rights.

Configuring the ACDProxy Service



The ACDProxy Service may be set up to start at the time the server is booted.

To Configure the ACDProxy Service:

1. Open the Control Panel.
2. Double-click the Services icon. The Services dialog box opens.
3. In the Startup Type box, select the Automatic radio button.
4. In the Log On As box, select This Account.
5. Click the drop down list button located to the right of the This Account field to display the list of accounts.

Note: The TCMAPP admin account must be configured prior to completing this step. Information on setting up the TCMAPP is provided in Chapter 4.Browse for and select the admin account you have setup for TCM-SETUP (TAPI_ADMIN). The selected account is displayed on the *This Account* field.

6. Enter the Password.
7. Click the OK button to save the changes and close the Service dialog box for ACDProxy.

8. If not highlighted, click ACDPROXY Service and select the Startup button.

10. Click the Close button to close the Services dialog box.

11. Reboot the server.

Note: If you have not installed Microsoft TAPI 2.1 or a minimum of Service Pack 4, the ACDProxy Service will not start. Refer to Chapter 4 for information on installing Microsoft TAPI 2.1.

Microsoft Outlook 97

If you have Microsoft Outlook 97, version 8.02.4212 or higher, loaded on your machine, you may use it with the Symposium TAPI Service Provider.

Note: Although Microsoft Outlook 97 works with the Symposium TAPI Service Provider, Nortel does not support Microsoft Outlook 97. This means that problems with Microsoft Outlook 97must be addressed with

Microsoft. Nortel does not provide the Microsoft Outlook 97 software on the Symposium TAPI Service Provider CD ROM. This software is located on Microsoft's Web page.

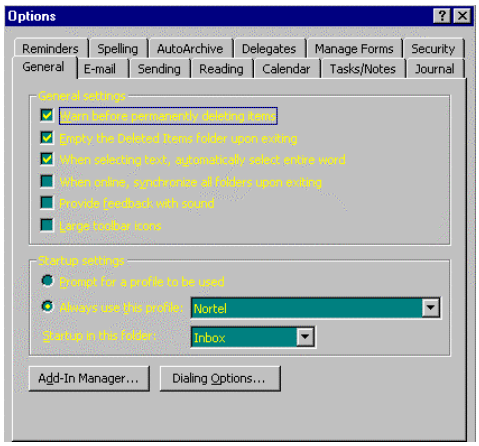
This information is for general purposes only and is intended only as a guide in using Microsoft Outlook 97 with the Symposium TAPI Service Provider.

For specific Microsoft Outlook 97 information, refer to the Microsoft Out-look 97 user documentation.

To Configure Microsoft Outlook 97:

Ensure the Symposium TAPI Service Provider software in installed, configured, and working (refer to the "Verifying the Symposium TAPI Service Provider is Working" section located in Chapter 5). Microsoft Outlook 97 must be loaded on your machine.

1. From the Contact folder, go to the Tools menu and select Option. The Options dialog box appears.



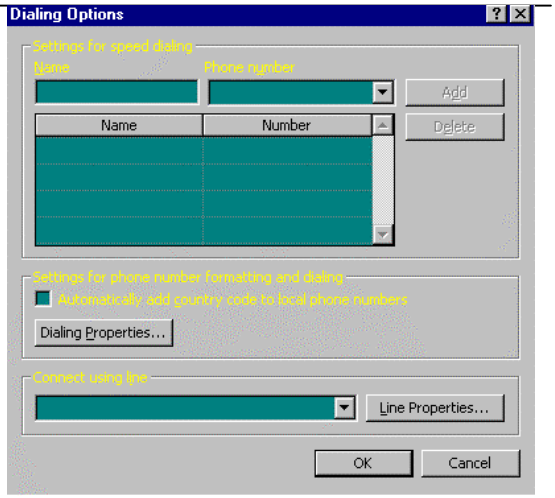
2. Click the Dialing Options… button. The Dialing Options dialog box is displayed.

3. To display the options, click the arrow located to the right of the Connect using line drop down listbox.

4. Select your line instead of the modem.

5. Make any other additional changes to the Dialing Properties.

6. Click the OK button to save the changes and close the Dialing Options dialog box.



Note: When placing a call using the Microsoft Outlook 97 software, use the Contact Manager in Microsoft Outlook 97, not the Contact Manager in Scheduler.

pcAnywhere

We recommend the use of pcAnywhere for remote support. Use of this application requires some changes to the TAPI Service Provider. The registry must be modified to allow both the mlinksp.tsp and the unimdm.tsp to work at the same time.

Note: If you are installing pcAnywhere after installing the Symposium TAPI Service Provider software, you may have to go to the Telephony Control Panel and remove mlinksp.tsp temporarily. Then install pcAnywhere and modem, and finally, add mlinksp.tsp again

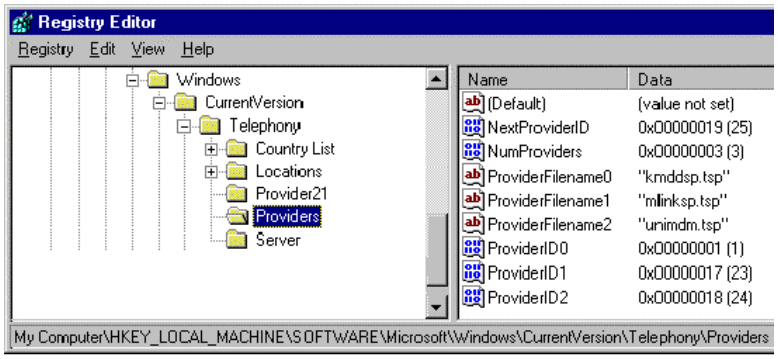
Setting up the pcAnywhere Registry

1. Locate the file regedit.exe in the WINNT directory, and double-click on it.

2. Click the + sign in front of the word HKEY_LOCAL_MACHINE.

3. Click the + sign in front of the word SOFTWARE.

4. Click the + sign in front of the word MICROSOFT.



5. Click the + sign in front of the words Current Version.

6. Click the + sign in front of the word Telephony.

7. Click the + sign in front of the word Providers. (It should look similar to the picture above after the change is made)

8. In this registry reverse the positions of mlinksp.mlink (or mlinksp.dc) and unimdm.tsp

- Double-click the **ProviderFilename1** entry and enter mlinksp.mlink (or mlinksp.dc) in the *Value Data* field, and click **OK**.

- Double-click the **ProviderFilename2** entry and enter ***unimdm.tsp*** in the *Value Data* field, and click **OK**.

- Double-click the **ProviderID1** entry and enter the number that used to appear in the ProviderID2 data in the *Value Data* field.

- Double-click the **ProviderID2** entry and enter the number that used to appear in the ProviderID1 data in the *Value Data* field.

9. Exit the Regedit application.

10. Install your modem in software as in normal use.

11. In pcAnywhere, you must select the same COM port on which the modem is installed.

To connect pcAnywhere correctly, set the baud rates on both the Host and Remote ends the same. This procedure ensures that mlinksp.tsp is the first Service Provider launched. Some applications will fail after seeing the first Service Provider fail, which could be unimdm.tsp. Thus, the application would never try to start mlinksp.tsp.

Chapter 8: Troubleshooting

Information on the License Manager troubleshooting tools, including instructions on how to use those tools to create valuable information Customer Support personnel can use to assist you when you are having problems.

This chapter also includes (1) information for verifying that the Symposium TAPI Service Provider is working, (2) descriptions of specific problems and their solutions, and (3) instructions for removing the Symposium TAPI Service Provider from your system.

License Manager Troubleshooting Tools

The FlexLM License Manager must be up and running successfully before the Symposium TAPI Service Provider can run. The License Manager contains two tools to debug and pass necessary information back to user describing the cause of failures.

SADBMON.EXE is a console debug monitor application. It displays important error information describing the cause of failure. The TAPI service provider logs information when attempting to validate the features purchased by the user. This application is located in Tools sub-folder of your installed directory.

DEBUG.LOG is written by the FlexLM License Manger and contains error logs plus status information of the license manager. It may contain important information if the License Manager is not working properly. DEBUG.LOG located in the destination install folder of Symposium TAPI Service Provider.

Logger Troubleshooting Application

During installation or while running an application, problems might occur that could not easily be found through normal running of the application.

When requested to by customer support personnel, creating a log file provides information that assists in troubleshooting problems. Before creating a log file, access the configuration dialog boxes and ensure that the desired log style is selected. The default style that allows for all data items to be logged is "1." Do not change this default style unless instructed to do so by technical personnel. Refer to the "Configuring the Log Styles Table" section located in Chapter 3 for detailed information on selecting the data items to display on the Logger window.

The Logger application displays information in the Logger window that can be stored in the overflow file for review by technical personnel. When a troubleshooting session is started you should always clear the overflow file. This ensures that no old information from a previous session is being saved. When the troubleshooting session is completed you should append the information to the overflow file so that all information from the current session is saved.

Running the Logger Application

Note: Run this application only when requested to do so by Symposium TAPI Service Provider for Meridian 1 customer support personnel.

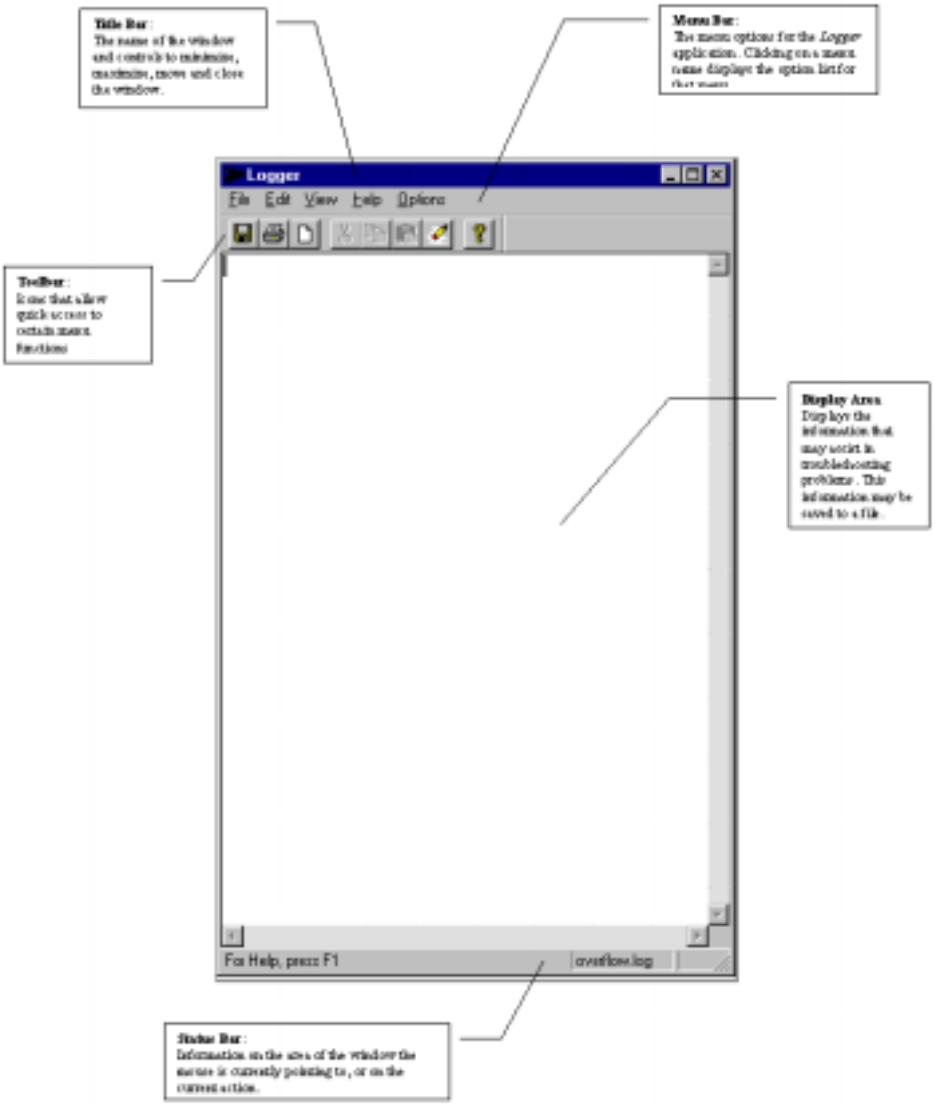
The Logger application is accessed by running the Logger.exe program located in the \M1SERVER\Tools directory. To Access the Logger.exe program:

1. Click on Start and select Windows NT Explorer from the Pro-grams list.

2. If you accepted the default drive, click on the C drive to display the folders. Otherwise, click on the Drive where the Symposium TAPI Service Provider for Meridian 1 software is installed.

3. Click on the M1SERVER directory to display the installed files, then select Tools.

4. Double-click on Logger.exe. The Logger window opens.

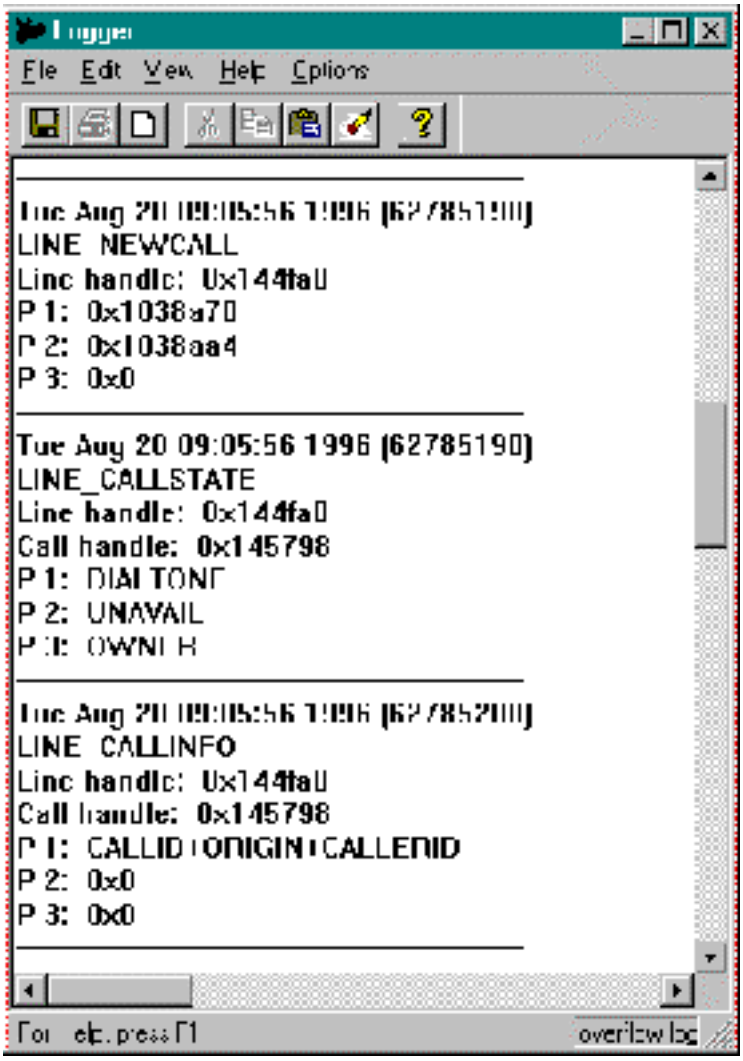


The Logger application includes a window-based user interface that allows you to view, edit, and print the text displayed in the Logger information display area. Logger provides menu options for using the Logger application. The window toolbar provides access to certain options without accessing the menus and selecting the option. The Logger window contains the following window elements.

Using the Logger Application

Displaying the Logged Information in the Logger Window:

1. Run the Logger application. Refer to the "Running the Logger Application" section. The Logger window opens.



2. Clear the overflow.log file. This file is located in the c:\M1Server\Tools directory if you accepted the default directory destination during installation, or in the M1SERVER\Tools folder located in the directory you selected during installation.

3. Click Options located on the Menu bar of the Logger window. The Options menu displays.

4. Click on the Clear Overflow File option.

5. Start the CTI Application. The Event and Error messages display on the Logger window.

The information logs according to the Log Styles Number selected on the configuration dialog boxes. Refer to the "Configuring the Log Styles Table" section located in Chapter 3 for detailed information on selecting the data items to display on the Logger window.

Note: If the Log Style number selected on the configuration dialog boxes is 0, the Logger application does not display any logged information.

Saving the Information to a File

To save the specific information during the troubleshooting session, you must save it to a .log file.

When the troubleshooting session is over, follow these steps to append the Overflow file.

1. Click Options located on the Menu bar of the Logger window. The Options menu is displayed.

2. Click the Append Overflow File option, or use the Save As option to save the information to a file, as follows:

   A. Select the Save As option on the File menu, or click the Save icon located on the Toolbar. The Save As dialog box is displayed.

   B. Enter the file name and directory path.

   C. Click the OK button or press <Enter> to save the file and close the Save As dialog box.

The Troubleshooting log is saved to the file.

Printing the Information on the Window

To print the complete window text:

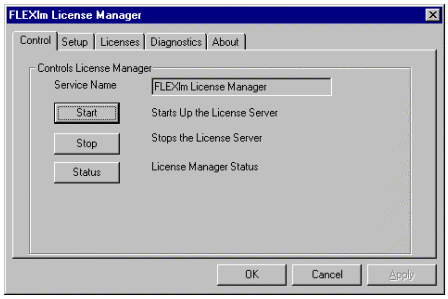
Select the Print option on the File menu, or click the Print icon located on the Toolbar. The complete window text is printed.

To print only selected window text:

1. Select the text that is to be printed. The selected text is highlighted.

2. Select the Print option on the File menu, or click the Print icon located on the Toolbar. The selected text prints.

Verifying that the FlexLM Manager is Working



The FlexLM Manager tool can be used to verify whether the License Manager is up and running. The FlexLM Manager may be run from Start/Programs/Nortel/Symposium TAP Service Provider for M1/- FlexLM Manager and physically located in your install folder of Symposium TAPI Service Provider (e.g., C:\M1sever\flexlm.cpl).

Run the FlexLM Manager from

DESTINATION_FOLDER\flexlm.cpl. The FlexLM Manager application dialog box opens. Click the Status button located in Control property sheet dialog box. This prints the status of FlexLM manager on the Control dialog box.

Verifying that the FlexLM Manager's Nortel Vendor Daemon is Working

The Nortel vendor daemon runs as a process from the license manager. The License Manager uses the license file to locate which vendor daemon is required to run. To verify whether nortelvd.exe is running:

1. Press Ctrl+Alt+Delete keys. A Windows NT Security dialog box appears hiding you desktop.

2. Click Task Manager to open the Windows NT Task Manager dialog box, and tab to the Process dialog box.

3. Scroll up or down to verify nortelvd.exe is listed.

4. If nortelvd.exe is not listed, verify the file exists in your installed folder of Symposium TAPI Service Provider.

5. If not found, re-install the product.

6. If nortelvd.exe is listed, but TAPI Server fails to start, contact Nortel Customer Service.

Verifying that the Symposium TAPI Service Provider is Working

The Microsoft TAPI Browser tool assists you in verifying that the Symposium TAPI Service Provider is properly installed and configured. Microsoft's Dialer, provided with Windows NT, may also be used to dial a call and verify that the Symposium TAPI Service Provider is running.

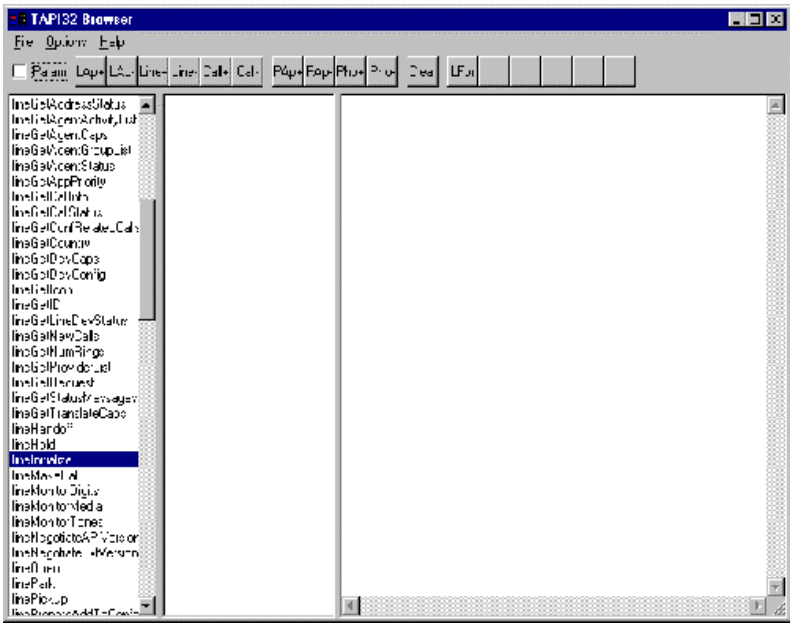
Using the Microsoft TAPI Browser Tool

1. Run the Logger program located in the c:\M1Server\Tools directory. Detailed information is provided in the "Logger Troubleshooting Tool" section located in this chapter. The Logger window opens.

2. Run the TB20w.exe program located in the c:\M1Server\Tools directory.
   • Click Start and select Windows NT Explorer from the Programs list.

   - If you accepted the default drive, click the C drive to display the folders. Otherwise, click the Drive where the Symposium TAPI Service Provider software was installed.

   - Click the c:\M1Server\Tools directory to display the installed files.



- Double-click TB20w.exe. The TAPI 32 Browser window opens.

3. Ensure the default values for the line: dwPrivileges are Monitor and Owner and that the line: dwMediaMode is Interactive Voice. To check these values:

- Click the Options menu and select the Default Values option.
- Click the line: dwPrivileges and set to Monitor and Owner.
- Click the line: dwMediaMode and set to Interactive Voice.
- Check both Autodeallocate choices on the Options menu.

4. Load the Service Provider by clicking the LAp+ button located on the Button bar.

The Center box lists the handles. A message is displayed on the right side of the screen informing you of the number of devices. If you are using Mlink, this message confirms that the Symposium TAPI Service Provider is talking to the Meridian Link module and the Link module is talking to the Meridian 1 switch.

Verifying That a Phone is Configured Correctly.

Identify the telephone device associated with line 0. (This is generally the first one presented in the list of TNs on the TN table in the Configurator program.)

Marker for Browser graphic 07-30

Open line 0 on the Browser.

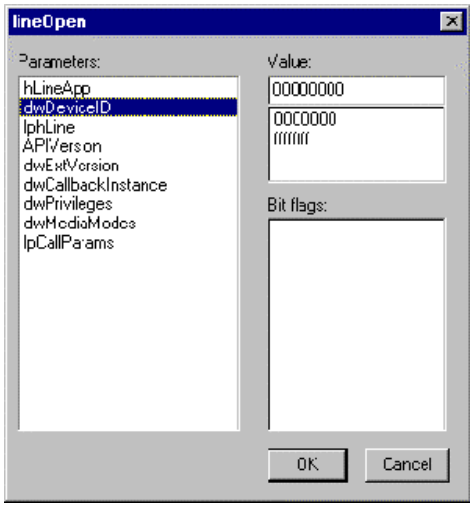
1. Click the Param check box located on the Button bar.

2. Click the Line+ button. The lineOpen dialog box opens.

3. Click the dwDeviceID parameter.

4. Click the OK button. The Line 0 is displayed in the center box of the TAPI Browser panel..

5. Perform some actions with the telephone, for example, take receiver off hook or call it manually. A message on the right side of the TAPI 32 Browser window informs you of the action. This verifies that the telephone is configured correctly. You may wish to identify additional telephones for random checking.



If you do not receive a successful message on the TAPI 32 Browser window, save the Logger information to a file for viewing by support personnel. Refer to the "Logger Troubleshooting Tool" section for detailed information on using the Logger tool for troubleshooting purposes.

If you are trying to start TAPI Service Provider with a large number of lines and the TAPI does not initialize, the "initialization timeout" parameter may be set too low. The default is 16, but must be set higher for more than 50 lines. Refer to the "Configuring TAPI Service Provider Database Information" section located in Chapter 3 for details on configuring the "initialize timeout.

Note: If the Browser application crashes for any reason, you must restart Windows NT. Microsoft has no error recovery and does not allow you to shut down tapisrv.exe.

Using the Browser for Additional Acceptance Testing.

Users requiring additional methods for ensuring the Symposium TAPI Service Provider is properly installed and working may use the following:

1. Run the TB20w.exe program and load the Service Provider. Refer to the "Using the Browser Tool" section.

2. Open all lines.
   - Double-click the Open All Lines command (use the left scroll bar to view this command).
   - Click OK for each line if the Params box is checked

3. Perform the following as necessary:

Answering An Incoming Call

1. From another phone set, call the DN of a monitored set.
2. Position on the Offering call in the Browser window.
3. Double-click the lineAnswer command.
4. Click OK.

Doing a Blind Transfer

Note: a blind transfer to CDN only works if you have installed the patch. Call Customer support for more information.

1. Position on the connected line and double-click LineBlindTransfer.
2. Click OK.
3. Position on Dialtone line and double-click LineDial.
4. Click IpszDestAddress and enter a valid DN to transfer to.
5. Click OK.

Creating a 3 Party Conference

1. Answer an incoming call.
2. Double-click LineSetupConference.
3. Position on Dialtone line and double-click LineDial.
4. Click IpszDestAddress and enter a valid DN on which to conference.
5. Position on OnHoldPendingConference line and double-click LineCompleteConference.

Adding 4-6 Parties to Conference

1. Position on the connected line.
2. Double-click LinePrepareAddToConference.
3. Click OK.
4. Position on Dialtone line and double-click LineDial.
5. Click IpszDestAddress and enter a valid DN to conference on.
6. Click OK.
7. Position on OnHoldPendingConference line and double-click LineAddToConference.

Note: Be sure to set the right Call= information for the Consult call.

8. Repeat these steps to add parties.

Making a call on digital sets for regular DN and for ACD Sets

1. Position on a Line that you want to make a call from and double-click on the lineMakeCall line.

2. Click IpszDestAddress and enter a valid DN to call.

3. Click OK.

Putting a call on hold and unhold

1. Position on a connected call and double-click lineHold.
2. Position on the onhold call and double-click lineUnHold.

Using the Windows Dialer

1. Run the Dialer.exe program located in the Windows NT directory.

2. Select a line number to control from the drop-down list.

The keypad is displayed.

3. Dial a known working number that can be answered. A completed call verifies that the Meridian 1 TAPI is working correctly.

Troubleshooting Problems

The following sections provide information to assist you in troubleshooting problems. The online help also provides troubleshooting tips.

First Call Attempt Fails

If you have completed installation and configuration of the various hardware and software components, and your first attempt to make a call fails, follow these steps:

1. Ensure the hardware connections are properly attached.

2. Confirm the Direct Connect and VAS ID setup.

3. Confirm the DCE/DTE jumper settings.

4. Confirm the Direct Connect (Link 0) parameters. Refer to Procedure 13 in the Meridian Link/ Customer Controlled Routing Installation and Upgrade Guide (553-3202-210).

5. Confirm the Meridian Link (Link 1) parameters. Refer to Procedure 14 in the Meridian Link/Customer Controlled Routing Installation and Upgrade Guide (553-3202-210).

6. Confirm the TAPI Service Provider /TCP/IP parameters. Refer to the Microsoft NT TCP/IP Reference.

7. Confirm the M1 Configurator. Run the Configurator application and verify the parameters for your switch and telephones. Refer to the "Configuration" chapter of this guide (Chapter 3).

8. Ensure the client application is configured properly.

Note: If you are trying to start TAPI Service Provider with a large number of lines and the TAPI does not initialize, the "initialization timeout" parameter may be set too low. The default is 16, but must be set higher for more than 50 lines. Refer to the "Configuring TAPI Service Provider Database Information" section located in Chapter 3 for details on configuring the "initialize timeout.

The Symposium TAPI Service Provider does not support dual Processor Configurations unless equipped with a minimum of Service Pack 4.

Downloading the Switch Configuration Information Failed

When downloading the Switch configuration information and no lines appear in the database or the download shows that a load failed, ensure that the words "LD 20" appear in the download.txt file.

Note: The AST value must be defined in order for the text conversion to write a TN into the database.

Testing the Connectivity

The Application Module and Intelligent Peripheral Equipment Module Diagnostic and Maintenance Guide (553-3211-510) describes methods to test the Direct Connect and the Meridian Link (host link). For example, you may test the hardware in the Application Module or IPE Module with the loopback test. You may also use the Logger App to record the messages being exchanged across the links. These messages are recorded to aid Nortel Networks support personnel diagnose the problem.

Verify that the Direct Connect link is working by performing "Procedure 12: Verifying the link status," located in the *Meridian Link/Customer Controlled Routing Installation and Upgrade Guide (553-3202-210)*.

Testing the TCP/IP Connection

Use the ping command to test the TCP/IP connection from the TAPI Service Provider to the IPE Module or Application Module.

1. Open a DOS window
2. Type ping [IPE TCP/IP Address]
3. If successful, a message is displayed saying the Host was contacted.
4. If not successful, a message is displayed saying the Host was not contacted. Proceed to the Troubleshooting section.
5. Close the ping window by pressing Esc.

Idle Message with Remote Party Disconnects

When the remote party disconnects a call, the Symposium TAPI Service Provider sends a LINE CALLSTATE message with the call state of idle. To terminate a call or a call attempt, TAPI32.DLL uses the TSPI line-Drop on the call. This has the effect of hanging up on that call and making it possible to make another call. This function disconnects a call, or abandons a call attempt in progress.

If the remote party disconnects a call, the service provider sends a LINE CALLSTATE message with a call state of disconnected. To clear the call, TAPI32.DLL must also drop the call by

invoking TSPI lineDrop on the call. This causes the service provider to transition the call state to idle.

A call handle remains valid after a call has been dropped. This enables TAPI32.DLL to call operations such as TSPI lineGetCallInfo to retrieve information about a call (for example, for logging purposes). The call handle is eventually deallocated by TSPI lineCloseCall, which shuts down operations for a call and deallocates (invalidates) the call handle.

Problem Descriptions

When using telephony services, you may encounter problems with the Symposium TAPI Service Provider, the Meridian 1, and the Meridian Link. The following is a summary of known problems and recommended solutions.

Table 1: Problem Descriptions

Problem	Explanation	Solution
The TAPI Service Provider will not load. Error message: Connect error, host %s %d	Connection to the Meridian Link IPE Module or Application Module cannot be made.	Use the Ping command to check the connection, the host name, and the module address of the Meridian Link IPE Module or Application Module.
The connection to the Meridian 1 cannot be established.	The Meridian 1 tries to connect but does not give a registration association identifier.	Use mlusr commands to check the Meridian Link and the Meridian. 1. (For information on mlusr commands, refer to the Intelligent Peripheral Equipment Module and Application Module Diagnostic and Maintenance Guide, 553-3211-510.) Also check the Symposium TAPI Service Provider configuration file to ensure that all values are correct.
The client application cannot access the TAPI Service Provider.		Verify that a Symposium TAPI Service Provider is registered and operational. Access the Task Manager and verify the TAPI SRV program is running. The Task Manager is accessed by clicking the right mouse button on the windows Menu bar.
Client applications do not connect (lineInitialize) to the TAPI Service Provider.		Use mlusr commands to check the Meridian Link and the Meridian 1. (For information on mlusr commands, refer to the Intelligent Peripheral Equipment Module and Application Module Diagnostic and Maintenance Guide, 553-3211-510.) Also check the Symposium TAPI Service Provider configuration file to ensure that all values are correct. Or -- Verify that a Symposium TAPI Service

Problem	Explanation	Solution
		Provider is registered and operational. Access the Task Manager and verify the TAPI SRV program is running. The Task Manager is accessed by clicking the right mouse button on the windows Menu bar.
Switch connection drops and terminates calls. Error message: Failed to allocate call info memory. Error log message: Resource_limitation _rejection.		All existing calls are aborted. While the connection is down, no new requests are allowed; however, the Symposium TAPI Service Provider continues to advertise services.
The TAPI Service Provider runs out of memory.		Add more memory to the server.
The Symposium TAPI Service Provider stops responding.		If the Meridian 1 is failing, use Meridian 1 procedures to identify and correct the problem. Verify that a Symposium TAPI Service Provider is registered and operational. Access the Task Manager and verify the TAPI SRV program is running. The Task Manager is accessed by clicking the right mouse button on the windows Menu bar. If the TAPI Service Provider is not responding, shut down and re-start your machine to close the TAPISRV.exe file, unload and reload the Symposium TAPI Service Provider for Meridian 1.
An incoming call over an Inbound ANI (IANI) trunk carrying a 10-digit ANI terminates at an ACD agent's In-Calls key. However, if the call appears in an TAPI Service Provider application and the incoming caller hangs up (abandons the call), all subsequent calls to the InCalls key are not recognized.		The agent should answer the next call by pressing the In-Calls key on the set manually.

Port Conflicts

Using this system, it is important that IP Port conflict are resolved. Ports being used can be seen by the command "netstat -a". The following is the result of a typical "netstat -a" command initiated from a Window NT command console.

```
netstat -a
Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    tapidmsscout:ftp       0.0.0.0:0              LISTENING
  TCP    tapidmsscout:70        0.0.0.0:0              LISTENING
  TCP    tapidmsscout:80        0.0.0.0:0              LISTENING
  TCP    tapidmsscout:135       0.0.0.0:0              LISTENING
  TCP    tapidmsscout:135       0.0.0.0:0              LISTENING
  TCP    tapidmsscout:407       0.0.0.0:0              LISTENING
  TCP    tapidmsscout:1031      0.0.0.0:0              LISTENING
  TCP    tapidmsscout:1035      0.0.0.0:0              LISTENING
  TCP    tapidmsscout:1052      0.0.0.0:0              LISTENING
  TCP    tapidmsscout:1691      0.0.0.0:0              LISTENING
  TCP    tapidmsscout:137       0.0.0.0:0              LISTENING
  TCP    tapidmsscout:138       0.0.0.0:0              LISTENING
  TCP    tapidmsscout:nbsession  0.0.0.0:0              LISTENING
  TCP    tapidmsscout:137       0.0.0.0:0              LISTENING
  TCP    tapidmsscout:138       0.0.0.0:0              LISTENING
  TCP    tapidmsscout:nbsession  0.0.0.0:0              LISTENING
  TCP    tapidmsscout:nbsession  PLATFORM3:1377         ESTABLISHED
  TCP    tapidmsscout:nbsession  BUILD:4664             ESTABLISHED
  TCP    tapidmsscout:1052      47.113.64.34:8888      CLOSE_WAIT
  TCP    tapidmsscout:1691      ntftp:ftp              ESTABLISHED
  TCP    tapidmsscout:4029      0.0.0.0:0              LISTENING
  TCP    tapidmsscout:4029      ntftp:nbsession        ESTABLISHED
  TCP    tapidmsscout:137       0.0.0.0:0              LISTENING
  TCP    tapidmsscout:138       0.0.0.0:0              LISTENING
  TCP    tapidmsscout:nbsession  0.0.0.0:0              LISTENING
  TCP    tapidmsscout:1029      0.0.0.0:0              LISTENING
  TCP    tapidmsscout:1029      localhost:1035         ESTABLISHED
  TCP    tapidmsscout:1030      0.0.0.0:0              LISTENING
  TCP    tapidmsscout:1035      localhost:1029         ESTABLISHED
  UDP    tapidmsscout:135       *:*
  UDP    tapidmsscout:407       *:*
  UDP    tapidmsscout:nbname    *:*
  UDP    tapidmsscout:nbdatagram  *:*
  UDP    tapidmsscout:nbname    *:*
  UDP    tapidmsscout:nbdatagram  *:*
  UDP    tapidmsscout:nbname    *:*
  UDP    tapidmsscout:nbdatagram  *:*
```

Four fields exist in the netstat printout:

1. Protocol, which is TCP or UDP,

2. The local address of the machine and the port that is use,

3. The foreign address and port number,

4. The state, which is LISTENING, ESTABLISHED, CLOSE_WAIT, or TIME_OUT. If, before the TAPI M1 Server is installed, a port 5000 appears in this list, a conflict may exist.

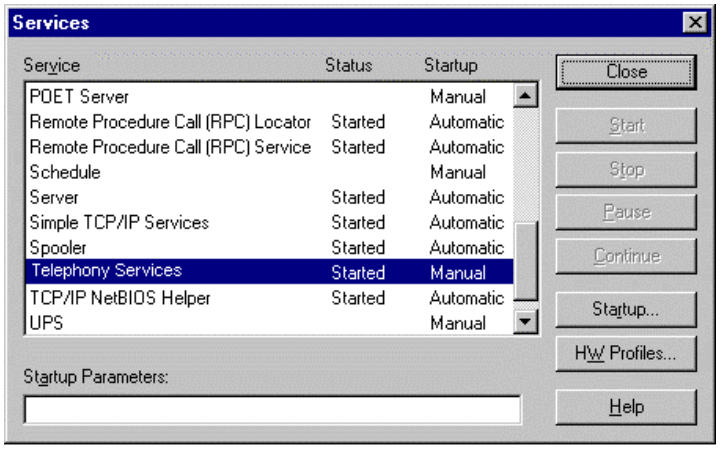
Note: The time the port number does not appear in the netstat printout at all times. For example, on the first line the word "ftp" appears. This is actually a listening port number. The listening port number is found in the "c:\winnt\system32\drivers\etc\services" file.

Microsoft TAPI-based Issues

No Error Recovery

When an application crashes, closing the application and restarting it does not unload Microsoft TAPI. You must re-start your machine. Re-starting closes TAPISRV.exe.

Closing the TAPISRV.exe



Users are not allowed to shut down TAPISRV.exe, so Microsoft TAPI currently has no way of unloading. You must shut down and re-start your machine before the TAPISRV.exe file will close. You can verify the status of the TAPISRV (Telephony Services) by (1) opening the Control Panel,. (2) double-clicking the Services icon. The Services dialog box opens. Telephony Services should be marked as Started.

TAPISRV.exe unable to locate DLL

If you receive this message, "tapisrv.exe unable to locate DLL," you must reboot your machine so the system sees the DLL.

RegisterProcessService Not Found

Receiving the following message: RegisterProcessService not found in kernel32.dll, indicates a bad build on the CDROM NT4.0 releases of tapiserv.exe. This bad build results in a call to a routine (RegisterProcessService) that no longer exists in the kernel32.dll.

The bad build date and size of the file is as follows:

- 111,616 bytes
- Date:06/17/97 5:48pm

This build appears on some Microsoft developers CD ROMs.

To resolve this problem:

1. Reinstall the operating system with a known good CD ROM.

Or

2. Upgrade the TAPI 2.0 to TAPI 2.1. This repairs the tapiserv.exe.

LINERR_NODRIVER

When TAPI assigns the first line to the unimodem you receive the following message:

LINERR_NODRIVER

If you have a unimodem configured and initialize all lines, the TAPI sees it and assigns the first line to the unimodem.

1. Ensure that the unimodem is not the first on the list.

2. Access the Control Panel from the Start\Settings menu. Double-click the Telephony icon to display the Telephony Properties dialog box.

3. Click the Unimodem Service Provider to highlight it and click the Remove button. After you have installed the TAPI Service Provider, you can re-add the Unimodem.

Receive 'Success' when Service is Stopped

LineInitializeEx returns SUCCESS even though the service is stopped. Microsoft TAPI does not pass the failed state, but continues to load any other providers and returns success with the number of devices to the application. However, when the service is stopped, the number of devices is returned as 0.

Meridian Link-based TAPI Service Provider Issues

This section contains known issues that occur with the Meridian Link based TAPI service provider. These problems exist when Meridian Link (or the switch) does not present complete information.

Meridian Link Presents No Information

Incoming calls do not appear when the original call is not answered and forwarded to a controlled DN. Meridian Link presents no information on "Call forward -no answer" incoming calls to a controlled DN. However, if the call is answered manually, a StatusChange of ACTIVE, then CONNECTED is seen.

Call Progress Messages not Delivered

If a non-AST controlled telephone is called as the consultation leg of a manually initiated (from the telephone and not a TAPI application) conference call, certain call progress messages are not delivered to the application.

For example, consider three phones A, B and C. Both A and B are AST controlled, while C is not. A is on an established call to B. From the conference key and the key pad of A, a consultation call is placed to C. No Meridian Link messages are sent when C answers, therefore there is no way for the Symposium TAPI Service Provider to determine when C has answered the call.

From a TAPI point of view, this is what occurs on the TAPI application controlling A.

- A has a call to B. CallHandle1 = CONNECTED.
- A places consultation call to C. CallHandle1 = CONFERENCED,
- CallHandle2 = DIALTONE, CallHandle3 = ONHOLDPENDING-CONF.

Note: CallHandle2 is the consultation leg of the call and CallHandle3 is the conference call.

- C answers consultation call. All call handles remain as above.
- CallHandle2 remains in dialtone state.
- A completes the conference call. CallHandle1 = CONFERENCED,
- CallHandle2 = CONFERENCED, CallHandle3 = CONNECTED.

Any TAPI application would expect this. If C disconnects prior to the completion of the conference call, Meridian Link does not send any message indicating that C has disconnected. This causes the Symposium TAPI Service Provider for Meridian 1, and subsequently the TAPI application, to lose track of the true state of the call.

From a TAPI point of view, this is what occurs on the TAPI application controlling A.

- A has a call to B. CallHandle1 = CONNECTED.
- A places consultation call to C. CallHandle1 = CONFERENCED,
- CallHandle2 = DIALTONE, CallHandle3 = ONHOLDPENDCONF.

Note: CallHandle2 is the consultation leg of the call and CallHandle3 is the conference call.

- C answers consultation call. All call handles remain as above.
- CallHandle2 remains in dialtone state.
- C disconnects prior to A completing the conference call. All call handles remain as above.

A TAPI application would not expect this.

CallHandle2 and CallHandle3 should transition to IDLE while CallHandle1 should transition to ONHOLD.

The above problem also exists for supervised transfer. Given the same three phones as above, no messages are sent when C answers the consultation call, or when C drops prior to completion of the supervised transfer.

Status Change Messages not Delivered

When a transfer consultation call is dropped after it is answered but before its completion, the Symposium TAPI Service Provider fails. No StatusChange messages are presented indicating a change in call state unless the third party never answers, or unless the consultation call is to an AST monitored phone. In this instance, the internal status is fed back to the other end of the call and proper recovery is performed.

When a three-party conference is manually created and put on hold, Meridian Link does not send a status change to the Symposium TAPI Service Provider for Meridian 1. Thus, the Symposium TAPI Service Provider does not know the call is on hold.

Dropping the Original Call during Consult Transfer

When the original call is dropped while the consultation call is ringing, the Symposium TAPI Service Provider fails.

Transferring Number not Displayed

On transferred calls , Meridian Link presents only the DN of the party performing the transfer when the transfer DN is also AST controlled by using internal feedback. If the transfer DN is not AST controlled, then Meridian Link does not present the DN of the party performing the transfer because the DN type field is transfer/conference and the DN is NULL.

Blind Transfer Fails

A blind transfer to CDN works only if a patch is applied. Call Customer Support for additional information.

Caller ID not Reported

When controlling a DN that is attempting to bring in a conference, Unknown is displayed instead of the person initiating the conference.

Meridian Link does not report or transfer the caller ID to the called party of a conference. Refer to the "Transferring Number not Displayed" section.

The Other device DN type is reported as transfer/conference and the conference DN is NULL. However, "Inbound Call Processing is usually selected..

Call Status Messages sent by Meridian Link

When selecting only the "Outbound Call Processing" on the Host dialog box and, consequently, disabling inbound call processing, the Meridian Link still sends call status. However, generally, the "Inbound Call Processing" option is selected.

Called Number not Displayed when Routed to CDN

Meridian Link presents the calling number, but not the called number, when the incoming call is transferred or forwarded to the CDN. For example, 2495 calls 2491, 2491 forwards to a CDN (2121). The RouteRequest message shows the calling number (2495) but not the called number (2491).

Park Not Supported

Meridian Link does not support Park. There are no park or unpark StatusChange messages. When a park is performed manually at the set, the call is reported as ONHOLD and never goes off hold. If the call is not picked up, a new call is presented in addition to the onhold call. The call ID is the same as the ID of the held call.

Enhanced ISDN Progress Messages for Outbound Calls

Meridian Link provides additional network call progress information for outbound calls provided in X11. Meridian Link 5 forwards all of the following ISDN- provided cause IE values where calls are not completed:

Meridian 1 Messaging

Table 2: Meridian Messaging

1 - Unallocated (unassigned) number	3 - No route to destination
17 - User busy	18 - no user responding
22- number changed	27 - destination out of order
28 - Invalid number format (address incomplete)	34 - no circuit/channel available
38 - Network out of order	41 - Temporary failure
42 - Switch equipment congestion	127 - Interworking, unspecified with inband information available

Meridian 1 based predictive dialer or outdialing applications of all kinds are able to process more calls in less time by interpreting the called party status. Invalid numbers may also be compiled and manually updated by agents in order to increase the accuracy of the customer's database.

IVR Messages

The following topics include the IVR normal messages and the IVR error messages.

Normal Messages

Note: This information is presented for reference purposes only. Refer to your IVR User Documentation for complete message information.

The following table describes informative messages displayed during normal operation:

Table 3: Normal Messaging

Number	Message Text	Description
M01	Operating in off-line auto transfer Mode.	IVR module could not register with the TAPI Service Provider so all incoming requests from user cells will immediately return without transferring data.
M02	IVR module registered successfully and Assoc: value	IVR module has established a connection to the TAPI Service Provider and stands ready to transfer data. The Association ID is a unique number generated by the TAPI Service Provider to represent this connection.
M03	Read queue opened successfully	IVR module opened the message queue through which it will receive data from the user cells.
M04	Write queue opened successfully	IVR module opened the message queue through which it will send data to the user cells.

Number	Message Text	Description
M05	IVR module is not registered - transferring call with data: <data>	IVR module received a request from a user cell and is in off-line auto transfer mode (see above). It will immediately return control to the user cell.
M06	Automatically transferring the call	Due to an unexpected problem in communicating with the TAPI Service Provider, control returns to user cell.
M07	Sent data: <string> with MsgRefId: <value>	Data incoming from a user cell has been successfully sent to the TAPI Service Provider.
M08	Retry successful - IVR module is now registered with IVR driver	Previous attempts to establish communication with the TAPI Service Provider had failed, the IVR module was finally able to establish communication.
M09	Socket successfully closed	Termination procedures for the IVR module involve closing the socket connection to the TAPI Service Provider. This was completed successfully.
M10	Closing connection and entering offline auto transfer mode	Unexpected socket problems interrupted data transfer to the TAPI Service Provider. IVR module will attempt to reestablish communications.
M11	Read queue successfully closed	The IVR module was successful in its attempt to close the message queue from which it receives data from the user cells.
M12	Write queue successfully closed	The IVR module was successful in its attempt to close the message queue through which it sends data to the user cells.
M13	Processing Response of MsgRefId: <value>	The TAPI Service Provider had received data from the IVR module and is now sending a message back indicating that it successfully processed the data. The IVR module will return control to the user cell from which the data originated.
M14	with the following wait time:<value>	This message follows the above message #M13. The wait time is the number of seconds elapsed from the point at which the IVR module sent the data to the TAPI Service Provider until the point when it received a response message from TAPI Service Provider.
M15	Successfully sent response to user cell	The IVR module properly returned control to the user cell that originally sent the current data.
M16	Timed out call with MsgRefId <value> - sent transfer message	The number seconds elapsed since the IVR module sent data to the TAPI Service Provider is greater than the time-out value specified in the config file. The IVR module will return control to the user cell

Number	Message Text	Description
		without waiting for response from the driver.
M17	Recycling message queues	The IVR module detected a problem with the message queue communications. It will attempt to close and reopen both message queues.
M18	Recycling - Read queue successfully closed	While recycling the message queues, IVR module successfully closed the read queue.
M19	Recycling - Write queue successfully closed	While recycling the message queues, IVR module successfully closed the write queue.
M20	Recycling - Read queue opened successfully	While recycling the message queues, IVR module successfully opened the read queue
M21	Recycling - Write queue opened successfully	While recycling the message queues, IVR module successfully opened the write queue.
M22	Retrying message send	IVR module detected problems in message queue communications and successfully recycled the message queues. It will now attempt to resend the message that originally caused the recycle.
M23	Successfully read the following configuration parameters:	IVR module is moving through its startup phase during which it read configuration options.
M24	Timeout is: <value>	Timeout value read during startup phase.
M25	HomeHost is: <string>	Local host name read during startup phase.
M26	ExternHost is: <string>	TAPI Service Provider host name read during startup phase
M27	Port is: <value>	Port number on TAPI Service Provider host through which IVR module will establish socket communication
M28	NWCallIDFlag is: <value>	Network Call ID status read during startup phase. 1 indicates yes and 0 indicates no.
M29	LogDuration is: <value>	Number of days log files will remain on the system read during the startup phase.
M30	DN count is: <value>	Number of DNs to be monitored read during the startup phase.
M31	DN to be monitored: <value>	One DN to be monitored in the list read during the startup phase.

Note: This information is presented for reference purposes only. Refer to your IVR User Documentation for complete error message information. The following table describes messages encountered during error conditions of varying severity:

Error Messaging

Table 4: Error Messaging

Number	Error Message	Description
E01	Configuration Error - Could not open configuration file	IVR module either could not find or does not have the read permission to open the configuration file named IVRmodule.cfg.
E02	Problems in reading configuration information - exiting	The IVR module encountered problems while reading the config file IVRmodule.cfg. These may be problems with syntax. Refer to the section on configuration for more information.
E03	Problem in initializing control block.	Initialization failed and the IVR module will quit. See associated error messages for more details.
E04	Problem in opening socket - Retrying	The IVR module could not establish socket communications with the TAPI Service Provider and will make another attempt.
E05	Unable to open socket connection	The IVR module could not establish socket communications with the TAPI Service Provider despite repeated attempts. Contact support personnel for the IVR driver to be sure the software is running and there are no system problems on the TAPI Service Provider that would impede socket communication.
E06	Unable to register with IVR driver over socket - Retrying	The IVR module successfully connected to the designated socket on the TAPI Service Provider but could not register with the IVR driver software, which manages the data transfer. It will make additional attempts to register until it reaches the maximum number of retries.
E07	Unable to register with IVR driver over socket on the TAPI Service Provider.	Repeated attempts to register (see above) were not successful and have exceeded max retries. Contact support personnel for the IVR driver to be sure it is functioning properly on the TAPI Service Provider.
E08	Unable to open read queue	data to the user cells. Contact your system administrator.
E09	Unable to open write queue	The IVR module was unable to open the message queue through which it would receivedata from the user cells. Contact your system administrato
		r.
E10	Problem in transferring call	The IVR module was unable to send a response to the user cell. This is typically due to message queue problems. Contact system administrator.

Number	Error Message	Description
E11	Problem in sending data with MsgRefId:	The IVR module was unable to send data over the socket to the TAPI Service Provider. Contact your system administrator or support personnel.
E12	System Error	The IVR module encountered a system-related error in processing. Refer to accompanying text for more information.
E13	EINVAL error in message queue read	This error indicates that the read queue was invalid when the IVR module attempted to read data. Contact system administrator or support staff.
E14	EACCES error in message queue read	This error indicates that the IVR module process does not have the proper access permission to read from the read queue. Contact your system administrator or IVR module support personnel
E15	EIDRM error in message queue read	This error indicates that the read queue identifier has been removed from the system. Contact system administrator or support personnel.
E16	E2BIG error in message queue read	The IVR module attempted to read a message that was too big for the message queue.
		Contact system administrator or support personnel.
E17	Unable to recycle message queues - quitting	Following message queue problems the IVR module attempted to close and reopen the message queues. These attempts were unsuccessful and the IVR module is terminating itself. Contact your system administrator.
E18	Retry failed - IVR module could not register with IVR driver	The IVR module was not registered with the IVR driver and attempted to register. This attempt was unsuccessful, which indicates that the condition that initially prevented or terminated registration is still present. Contact support personnel for the IVR driver to be sure it is functioning properly on the TAPI Service Provider.
E19	Problem in reading received socket message - retrying	to read the socket message.
E20	Unable to read received socket message	IVR module detected but could not read a socket message (see above) despite repeated attempts. Typically this will be followed by errors indicating that the socket is bad and the IVR module will attempt to recycle the socket. Should this recycle attempt not succeed or this error reoccurs contact your system administrator.
E21	Problem in decoding socket	The IVR module successfully read a socket message but could

Number	Error Message	Description
	message header	not interpret it properly. Contact IVR driver support personnel to be sure the IVR driver is functioning properly or contact your system administrator to be sure that the message queues are working correctly.
E22	IVR driver has terminated the socket connection.	The IVR module successfully received a message from the IVR driver indicating that it is terminating the registration between the IVR driver and the IVR module. The IVR module sent an acknowledgment message and will enter off-line auto transfer mode.
E23	Unable to send host disconnect response message.	an acknowledgment message. This attempt failed.
E24	Problem in closing socket after host disconnected	The IVR module received a host disconnect message (see above) and encountered problems afterward while attempting to close the socket. Contact your system administrator.
E25	Received socket message has an unknown type	did not recognize the type field in the socket message. Contact IVR driver support personnel.
E26	Problem in accessing socket	The IVR module encountered an error while trying to access the socket connection to the IVR driver. It will close the socket, enter off-line auto transfer mode and attempt to re-register with the IVR driver following a short delay.
E27	Problem in closing socket following failed socket read	socket resulting in an error. Contact system admin.
E28	Problem in closing socket during exit routine	While attempting to clean up resources during the termination procedure, the IVR module encountered problems closing the socket. Contact your system administrator.
E29	Problem in closing read queue during exit routine	While attempting to clean up resources during the termination procedure, the IVR module encountered problems in closing the read queue. Contact your system administrator.
E30	Problem in closing write queue during exit routine	While attempting to clean up resources during the termination procedure, the IVR module encountered problems in closing the write queue. Contact your system administrator.
E31	Initialize routine failed while initializing control block	The IVR module encountered problems while establishing values for the data block, which maintains information pertaining to the socket connection to the TAPI Service Provider. Contact a system administrator or programmer for assistance.
E32	Initialize routine failed while initializing far end connection	The IVR module encountered problems while establishing preliminary connection to the TAPI Service Provider. Check the IVRmodule.cfg file to be sure the externhost name is correct. Also check the /etc/hosts file to be sure the externhost

Number	Error Message	Description
		name is associated with the correct IP address. If problems persist, contact support personnel.
E33	Problem in creating list of DNs to be monitored	The IVR module previously read in the list of DNs to be monitored and was attempting to encode the list into a format compatible with the IVR registration message. This process failed. Contact IVR module support personnel.
E34	Problem in creating IVR registration message	The IVR module failed while encoding registration information into the proper format required by the TAPI Service Provider. Contact IVR module support personnel.
E35	Problem in sending registration message	The IVR module failed while attempting to send the registration message to the TAPI Service Provider. Contact your system administrator or IVR module support personnel.
E36	Received no response to registration message from IVR driver	The IVR module successfully sent its registration message to the TAPI Service Provider but received no response. Check with TAPI Service Provider support personnel to be sure the IVR driver is running and the TAPI Service Provider is configured properly.
E37	Problem in receiving registration response	The IVR module successfully sent its registration message, detected a response but encountered errors while trying to read the response. Contact your system administrator or IVR module support personnel.
E38	Problem in creating caller data message	The IVR module received caller data from a user cell and was attempting to encode this data into a format required by the TAPI Service Provider. This process failed. Contact IVR module support.
E39	Problem in sending user data message	The IVR received caller data from a user cell and successfully encoded it into a message intended for the TAPI Service Provider. It encountered problems while attempting to send this message to the TAPI Service Provider. Contact your system administrator or IVR module support personnel.
E40	Problem in enquing user message	The IVR module successfully sent data to the TAPI Service Provider and encountered problems while attempting to store this data internally. Contact IVR module support personnel.
E41	Problem in allocating linked list structure	The IVR module successfully sent data to the TAPI Service Provider and encountered problems while attempting to store this data internally. Contact IVR module support personnel.
E42	Unable to generate time value in call tracking queue	The IVR module successfully sent data to the TAPI Service Provider and encountered problems while attempting to store this data internally. Contact IVR module support personnel.
E43	Problem in creating IVR Disconnect message	The IVR module failed while encoding disconnect information into the proper format required by the TAPI

Number	Error Message	Description
		Service Provider. Contact IVR module support personnel.
E44	Problem in sending disconnect message - Retrying	The IVR module failed while attempting to send the disconnect message to the TAPI Service Provider. Contact your system administrator or IVR module support personnel.
E45	Problem in receiving disconnect response - Retrying	The IVR module failed to receive the expected response to the disconnect message sent to the TAPI Service Provider. It will make additional attempts until it reaches the maximum number of retries.
E46	Incorrect disconnect response received - Retrying	The IVR module received an erroneous response to the disconnect message sent to the TAPI Service Provider. It will make additional attempts until it reaches the maximum number of retries.
E47	Unable to transmit and receive disconnect messages - closing socket	Repeated problems with socket communications have caused the IVR module to discontinue its attempts to communicate with the TAPI Service Provider. This is most likely caused by shutdown procedures on the TAPI Service Provider in response to the disconnect request. If socket problems persist, contact your system administrator.
E48	Problem in closing socket following disconnect message problem	While attempting to clean up resources during the disconnect procedure the IVR module encountered problems closing the socket. Contact your system administrator.
E49	Unable to locate user data in the queue - this call may have timed out	While processing a response from the TAPI Service Provider regarding a specific call, the IVR module could not locate the associated data in its internal storage queue. This condition is usually caused by excessive delays in processing on the TAPI Service Provider. If the wait time for a specific call exceeds the number of seconds specified in the timeout parameter of the configuration file, the IVR module will automatically return control to the user cell instance that sent the data and remove the call from its internal storage queue.
E50	Error-Unable to generate time value in processing response	The IVR module was attempting to use the time function on the system to compute the wait time and it encountered problems. Contact your system administrator for assistance.
E51	Problem in sending response back to user cell	The IVR module received a response from the TAPI service Provider for a specific call and encountered problems while sending the necessary response to the user cell over the write queue. Contact your system administrator for assistance.
E52	Could not locate call with MsgRefId: <value> - queue is empty	The IVR module received a response from the TAPI Service Provider for a call for which it had no record stored internally. See description for E49 above.
E53	Could not find call with MsgRefId: <value> in the queue	See descriptions for E52 and E49 above.

Number	Error Message	Description
E54	Problem in creating message queue	The IVR module encountered problems in creating a message queue. Contact system administrator
E55	Problem in setting message queue permissions	The IVR module successfully created a message queue but encountered problems in modifying its permission parameters. Contact system admin.
E56	Problem in cleaning up old log files before opening a new one	The IVR module encountered problems in logfile maintenance. Contact IVR module support staff.
E57	Problem in sending timeout message with MsgRefId: <value>	The IVR module encountered problems while sending a response over the write message queue to the user cell after a call exceeded the maximum wait time and timed out. Contact system admin.
E58	Problem in locating cause IE in processing status message	The IVR module expected to receive status info from the TAPI Service Provider and encountered problems in decoding the message. Contact TAPI Service Provider or IVR module support personnel.
E59	Cause value in status message unknown	The IVR module expected to receive status info from the TAPI Service Provider and encountered problems in decoding the message. Contact TAPI Service Provider or IVR module support personnel.
E60	Cause: message length is incorrect	The TAPI Service Provider returned a message from the IVR module unprocessed due to errors in message construction. Contact IVR module support personnel for assistance.
E61	Cause: mandatory IE is missing in message type	The TAPI Service Provider returned a message from the IVR module unprocessed due to errors in message construction. Contact IVR module support personnel for assistance.
E62	Cause: IVR name is already registered	The IVR module attempted to register with the TAPI Service Provider using a host name that is already associated with a prior registration. Check for multiple instances of IvrModule running on your host or for multiple hosts using duplicate names. If problem persists contact IVR module support.
E63	Cause: no associations available - try later	The IVR module attempted to register with the TAPI Service Provider that is already serving its maximum number of client machines. The IVR module will function in off-line auto transfer mode and attempt to register periodically.
E64	Cause: IVR not registered so no messages may be sent	The IVR module attempted to send messages to the TAPI Service Provider prior to successfully registering. If this problem persists, contact IVR module support personnel for assistance.
E65	Cause: This DN/port is already registered	The IVR module successfully sent registration information, which included a duplicate DN entered in the monitordn

Number	Error Message	Description
		section of the IVRmodule.cfg file. Check your configuration file for errors. If problem persists, contact IVR module and TAPI Service Provider support personnel.
E66	Cause: Registration of this DN/port failed	The TAPI Service Provider received a DN in configuration options but could not access it for monitoring. Check the IVRmodule.cfg file for errors and check your switch for possible problems with the specific DN. If problem persists, contact IVR module or TAPI Service Provider support personnel.
E67	Cause: This DN/port has a bad format	The TAPI Service Provider received a DN in configuration options but encountered errors with its setup. Check the IVRmodule.cfg file for syntax errors and check the switch for possible problems with the specific DN. If problem persists, contact IVR module, TAPI Service Provider or switch support.
E68	Cause: This DN/port is not registered	The IVR module sent a user data message to the TAPI Service Provider referencing a DN that had not been previously registered with the TAPI Service Provider upon startup. Check the IVRmodule.cfg file for syntax errors. If problem persists, contact IVR module, TAPI Service Provider or switch support.
E69	Cause: Data transfer task is not responding to the IVR driver	The IVR driver is experiencing problems while attempting to transfer user data. Contact IVR driver support.
E70	Unknown cause value in cause IE	The IVR module expected to receive status info from the TAPI Service Provider and encountered problems in decoding the message. Contact TAPI Service Provider or IVR module support personnel.
E71	Problem in opening temp filename <string> in cleaning up log files	The IVR module encountered problems in logfile maintenance. Contact IVR module support staff.
E72	Problem in reading input file <string> in cleaning up log files	The IVR module encountered problems in logfile maintenance. Contact IVR module support staff.
E73	Recycling - Problem in closing read queue	While attempting to recycle the message queues, the IVR module encountered problems while closing the read queue. Contact your system administrator.
E74	Recycling - Problem in closing write queue	While attempting to recycle the message queues, the IVR module encountered problems while closing the write queue. Contact your system administrator.
E75	Recycling - Unable to open read queue	While attempting to recycle the message queues, the IVR module was unable to open the message queue through which it would send data to the user cells. Contact your system

Number	Error Message	Description
		administrator.
E76	Recycling - Unable to open write queue	While attempting to recycle the message queues, the IVR module was unable to open the message queue through which it would receive data from the user cells. Contact your system administrator.
E77	EINVAL error in message queue write	This error indicates that the write queue was invalid when the IVR module attempted to write data. Contact system administrator or support staff.
E78	EACCES error in message queue write	This error indicates that the IVR module process does not have the proper access permission to write to the write queue. Contact your system administrator or IVR module support personnel.
E79	EIDRM error in message queue write	This error indicates that the write queue identifier has been removed from the system. Contact system administrator or support personnel.
E80	E2BIG error in message queue write	The IVR module attempted to send a message that was too big for the message queue. Contact system administrator or support personnel.
E81	Configuration Error - No command found	The IVR module encountered a missing command while processing configuration information in the IVR-module. cfg file. Check the file for syntax errors. Refer to the section on IVR module setup and configuration for more information.
E82	Error in configuration	The IVR module encountered errors while processing configuration information in the IVRmodule.cfg file. Check file for syntax errors. Refer to the section on IVR module setup and configuration for more information.
E83	Configuration Error - No Port Value specified	The IVR module found no port value while processing configuration information in the IVRmodule.cfg file. Check the file for syntax errors. Refer to the section on IVR module setup and configuration for more information.
E84	Configuration Error - No Home Host specified	The IVR module found no local host name while processing configuration information in the IVRmodule. cfg file. Check the file for syntax errors. Refer to the section on IVR module setup and configuration for more information.
E85	Configuration Error - No External Host specified	The IVR module found no external host name while processing configuration information in the IVRmodule. cfg file. Check the file for syntax errors. Refer to the section on IVR module setup and configuration for more information.
E86	IVR module encountered configuration errors	The IVR module encountered errors while processing configuration information in the IVRmodule.cfg file. Check file for syntax errors. Refer to the section on IVR module

Number	Error Message	Description
		setup and configuration for more information.
E87	Configuration Error - Input line too long in configuration file	The IVR module encountered errors while processing configuration information in the IVRmodule.cfg file. Check file for syntax errors. Refer to the section on IVR module setup and configuration for more information.
E88	Configuration Error - Too few words on input line in configuration file	The IVR module encountered errors while processing configuration information in the IVRmodule.cfg file. Check file for syntax errors. Refer to the section on IVR module setup and configuration for more information.
E89	Configuration Error - Too many words on input line in configuration file	The IVR module encountered errors while processing configuration information in the IVRmodule.cfg file. Check file for syntax errors. Refer to the section on IVR module setup and configuration for more information.
E90	Configuration Error - Expected digit and got character in configuration file	The IVR module encountered errors while processing configuration information in the IVRmodule.cfg file. Check file for syntax errors. Refer to the section on IVR module setup and configuration for more information.
E91	Configuration Error - value exceeds maximum in configuration file	The IVR module encountered errors while processing configuration information in the IVRmodule.cfg file. Check file for syntax errors. Refer to the section on IVR module setup and configuration for more information.
E92	Configuration Error - value too small in configuration file	The IVR module encountered errors while processing configuration information in the IVRmodule.cfg file. Check file for syntax errors. Refer to the section on IVR module setup and configuration for more information.

Removing the Symposium TAPI Service Provider Software

If it becomes necessary to remove the Symposium TAPI Service Provider software, an uninstall option is provided. Run Start/Programs/Nortel/Symposium TAPI Service Provider for M1/UnInstall. Alternatively, use the Add/Remove program from the Control Panel.

Glossary of Terms

ACD *See Automatic Call Distribution.*

ACM

Accessory Communication Module

AEM

Access Expansion Module

AML

Application Module Link

ANI

See Automatic Number Identification.

API

Application Programming Interface

ATA

Analog Terminal Adapter

Automatic Call Distribution

Referred to as ACD. A telephone system feature that automatically routes call to agents.

Automatic Number Identification

Referred to as ANI. Provides the capability that allows applications to identify the parties involved in a call and automatically transmit this information. ANI is typically a 10-digit number that is delivered by the network to identify the incoming caller.

Calling Line Identification

Referred to as CLID. Sends a telephone's designated number through the ISDN PRI network to the digit display on a receiving device.

CCR

Customer Controlled Routing

CDN

See Control DN.

CLID

See Calling Line Identification.

Computer Telephony Integration Link

Referred to as CTI Link. A physical and logical connection between a PBX and computing system.

Control DN

Referred to as CDN. Similar to an ACD queue with no agents. In essence, it is a "holding place" for calls and used by host enhanced routing applications.

CORWAN

Corporate Wide Area Network

CTI

Computer Telephony Integration.

CTIA

Computer Telephony Integration Accessory

CTI-IVR

Computer Telephony Integration -Interactive Voice Response

DBA

Display Based Access Expansion Module

DECT

Digital European Cordless Telecommunications

Dialed Number Identification Service

Referred to as DNIS. A telephone system feature that identifies a number that is dialed.

Direct Connect

A communication link between the Meridian 1 PBX and the Application Module (either the Meridian Link Module or the Customer Controlled Routing [CCR] Module). The Meridian Link IPE Module or Application Module software includes OA&M used to configure the Meridian Link connection.

Directory Number

Referred to as DN. A number that is the number assigned to a specific address.

DN

See Directory Number.

DNIS

See Dialed Number Identification Service.

DNs

Directory Numbers. See DN.

DTEV

Desktop Evolution

DTMF

Dual Tone Multi Frequency

ELAN

Enbedded Local Area Network

EMPC

Enhanced Multiprotocol Controller Card

ENET

Enhanced Network

FAI

Feature/Application Indication

FFC

Flexible Feature Code

IDC

Incoming Digit Conversion

IE

Information Element

Integrated Services Digital Network

Referred to as ISDN. A specific type of switch-based telecommunication service. An international standard defined by the ITU (International Telecommunication Union) for an all-digital network providing end-to-end digital connectivity to support a wide range of voice and non-voice (data and video) services. An extension of the telephone system from analog to digital transmissions.

IOC

Input/Output Controller

IP

Internet Protocol *See also* TCP/IP

IPE

Intelligent Peripheral Equipment

ISDN

See Integrated Services Digital Network.

IVD

Integrated Voice Data

IVR

Interactive Voice Response

LDAP

Lightweight Directory Access Protocol

LGC

Line Group Controller

LGCI

Line Group Controller - ISDN

LTC

Line Trunk Controller

LTCI

Line Trunk Controller - ISDN

MADN

Multiple Appearance Directory Number.

MCA

Meridian Communications Adapter

Meridian 1

The PBX telephone switch that controls the station sets associated with the TAPI client.

Meridian Link

Meridian Link commands and status messages use TCP/IP over a standard 10 Mbit Ethernet connection.

MIMS

Multimedia Messaging Server

NORTEL Support Hotline

For additional information or help, call (800) 4 NORTEL.

PAPI

Pangea Application Programming Interface

PBX

Private Branch Exchange

RCC

Remote Cluster Controller

RSC

Remote Switching Center

SCCS

Symposium Call Center Server

Service Providers

Referred to as SP. Software files needed to enable TAPI applications to communicate with the physical telephony device.

SP

See Service Providers.

SSD

Scan and Signal Distribution

Symposium Call Center Server

TAPI

See Telephony Application Programming Interface.

TAPI Service Provider

Files needed to enable TAPI-compliant applications to communicate with the telephone device.

TCM

Time Compression Multiplexing

TCP/IP

Transport control protocol (Internet protocol, a standard Ethernet networking protocol).

TDD

Touchtone Digital Display

Telephony Application Programming Interface

Referred to as TAPI. The Microsoft/Intel created standard for Windows telephony.

TSP

TAPI Service Provider

USB

Universal Serial Bus

WAN

Wide Area Network

XPM

Extended Peripheral Module

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